New Year's Greetings

ONCE a year for thirty-six years we have had the pleasure and privilege of wishing the whole rubber industry a Happy New Year. Who will say that our wishes have not been fulfilled and in a measure unbelievably great? Encouraged and heartened we therefore again send out our message of good will, health, prosperity and happiness for the year of our Lord 1925.

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA
Reg. U.S. Pat. Off.
Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.

No. 25 West 45th Street, New York

Telephone—Bryant 2576

CABLE ADDRESS: IRWORLD, NEW YORK

Member of the National Publishers' Association

HENRY C. PEARSON, F.R.G.S., Editor

Vol. 71 January 1, 1925 No. 4

SUBSCRIPTION: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made on application.

REMITTANCES: Should always be made by bank draft, Post Office or Express Money Order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

Copyright, 1925, by The India Rubber Publishing Co.

Table of Contents .....Text Page 268
Advertisers' Index .....Advertising Page 108
Classified Advertisements....Advertising Pages 72-78
Buyers' Directory.....Advertising Pages 80-106

Increase in Industrial Accidents

IT IS quite disconcerting to learn from the agencies which gather such information that during the past year there was an increase of 20 per cent in industrial accidents. Nine states alone—Illinois, Indiana, Wisconsin, Massachusetts, New Jersey, Delaware, Washington, Oregon, and Pennsylvania—totaled over 500,000 for 1923, an increase of about 100,000 over 1922, while the fatalities were 4,112 in eight of the states, as compared with 3,726 for the preceding twelve months. Much of this was undoubtedly avoidable.

Estimates put the year's total of accidents at 3,000,000, with 23,000 fatalities, 115,000 cases of permanent disabilities, and the cost of over a billion dollars. As to the causes of the increase, the chief factors appear to have been greater production, the employment of green hands, and a general lessening on the part of employers and employes of interest in safety.

Just to what extent the rubber industry as a whole shares in this discouraging showing the statisticians do not say, perhaps because they have not collected sufficient data from rubber factories; but it is to be hoped that because of the many safeguarding devices continually added to equipment the proportion is low.

Nevertheless, vigilance continues to be as much the price of safety as of liberty, and rubber manufacturers will do well to make frequent surveys of their plants in order to still further lessen human suffering and diminish financial losses so that their industry will have an enviable record in the next annual report of the National Safety Council.

A Billion for Rubber Bridge Paving

THAT a market for rubber of practically unlimited proportions lies in bridge paving is a fact not sufficiently appreciated. A great need exists, and were a portion of the extraordinary enterprise shown by the tire industry applied to paving it would not be long before public and private builders of bridges would be persuaded that rubber-paved roadways and footpaths are indispensable in insuring safe transportation and economical construction and maintenance.

Old-time spans of stone or of heavy timber were impaired almost wholly by ordinary wear and tear, and the action of the elements. With the coming of the steel structure resting upon piers, however, not only had marked variations in expansion and contraction to be reckoned with, but also the rapid play between strains and recoveries, called vibration.

Builders of steel bridges for railways early learned that vibration varied with the type of construction, being apparently at a minimum in the metal arch, with its principal members stiffened by comparison, and reaching a maximum in the suspension bridge in which the chief members

are in tension and in which the advantage of long spans is offset by the drawback of great flexibility. They found, too, that the magnitude of vibration was proportional to the speed of trains; that irregularities in the permanent way and structure yielding added to vibration; but the problem that puzzled most was that of overcoming the effects of impact, that dynamical action of a load in motion due to lack of vertical balance in the moving parts of locomotives.

Builders of vehicular bridges, too, are striving harder than ever to counteract the contrary force of impact. They have found it necessary to rebuild bridges that ordinarily would withstand great loads at rest, but have become weakened by much lighter loads in motion. With the aid of a photographic device these shocks have been determined with remarkable precision by the Bureau of Public Roads of the United States Department of Agriculture, which has also proved by experiments that a heavy, fast-moving motor truck can strike a blow equal to seven times its actual weight. At that rate a 5-ton truck with a load totaling 35,000 pounds could hit a bridge roadway with an impact of 245,000 pounds. It is not hard to fancy the cumulative effect of such mighty blows on a bridge when repeated by many trucks, often with their engines chugging so much in unison as to set up a vibration more vicious than that caused by blaring bands and marching hosts.

Alarmed at the steadily mounting damage being done to streets through heavy motor traffic, the city of Paris has offered prizes totaling 50,000 francs, to be awarded in 1925 for the best types of automobile shock absorbers. If vibration does so much damage to roadways on solid earth, how much more may it not do to roadways carried on various supports over other roads, chasms, railways, or water courses? If such important links in transportation are to be spared premature breakdown it is obvious that their roadways must be paved with a material radically different from those now in general use, something which will not only be durable and afford adequate traction but which will be resilient enough to absorb impact shock and repress, if not neutralize, vibration. Rubber is the one material which will not only save the surface but will save all. It not only allows of greater loads but lessens the need of frequent replacement.

While market possibilities are, of course, conjectural, yet it is possible to fairly approximate their extent. Estimating, for instance, on a span of the Brooklyn Bridge type, with a length of some 6,000 feet, and allowing for two roadways each 12 feet wide and two footways each 6 feet wide, there would be a total paving surface of 216,000 square feet, or 24,000 square yards. Using the moderate bid submitted for the rubber paving of Harvard Bridge, Boston, about $13 a square yard, the cost of such work would total $312,000, as compared with a bid of three times the amount for granite blocks, and even more for wood squares. Plainly, rubber can hold its own by a wide margin in competition with any "standard" paving material, even though a high percentage of crude rubber be employed in compounding. Throughout the country are thousands of other vehicular bridges with long spans and broad passageways that could and should be resurfaced with rubber, and the paving area of which might easily total 50,000,000 square yards, which at the minimum estimate quoted means $650,000,000 in contracts.

Nor does this take into account about 3,000 bridges in the country carrying 250,000 miles of steam railroads and 100,000 miles of street railways. As has been shown, all such bridges perish through vibration and impact as readily as the others and equally need protection. The latter requisite can surely be afforded with rubber blocks placed beneath the wooden sleepers which now rest uncushioned on stringers or longitudinal rail girders. This "Safety First" argument applies with equal urgency to the elevated railroads of New York, Boston, Chicago, and other cities. Carried on trestles, which are really bridges, they require a similar safeguard against the destructive agencies named, just as the public's health and comfort demand reduction of the incessant din and jarring due to the heavy overhead traffic. Adding the cost of installing such resilient blocks on railway bridges to that of paving with elastic material various vehicular spans, the nation's rubber bill for paving even present bridges might be justly computed at over one billion dollars, truly a national investment that could not fail to return itself many fold.

Balloon Tires on the Desert

To those who traverse the vast desert plains on horseback or in frequently stalled flivvers, following narrow trails or sandy roads, the balloon tire is already proving a great boon. Not only does it ride the beaten trails with no trouble but cross-country travel in almost any direction is for the first time possible. Sandy washes, gravelly expanses, and alkali wastes are skimmed over without effort. Light cars and heavy trucks can now go almost anywhere.

The great desert plains in the Americas, North and South; the boundless Sahara, and the Gobi Desert may now easily be negotiated. Another triumph for rubber and the air-filled tire.

RECENT REPORTS OF THE NATIONAL INDUSTRIAL CONFERENCE BOARD indicate that rubber workers are not in the highest paid class of wage earners, as frequently reported. News and magazine printers lead the list in amount of earnings with an average weekly wage of $36.14. The iron and steel industries come next with a pay envelope of $33.57, while the automobile factory workman's pay averages $31.12 a week. The book and job printers come next with weekly earnings of $31.01. Rubber workers, agricultural implement workers, chemical factory and electrical plant employes, all average wages near the $30 mark.

Dipped Rubber Glove Manufacture

Technical Importance of Dipped Goods—The Dipping Process—Factory Plan—Rubber and Compounding Materials—Solvents and Solvent Storage—Cement—Conditions of Dipping, Drying and Curing—Specification Gloves

By John Hadfield

THE term dipped goods includes such pure rubber articles as toy balloons, nipples, finger cots, bathing caps, seamless rubber gloves for special purposes. The line is an old one as regards balloons and novelties. The method dates from the discovery of cold vulcanization by sulphur chloride. For many years the simple processes of rubber solution, dipping, drying and cold curing were unstandardized. The development of goods for practical service conditions brought to the dipped goods manufacturer improved facilities in the form of special machinery that insures the quality of his output by control of factory drying conditions.

Types of Dipped Gloves

In a former article on the manufacture of dipped goods[1] considerable practical data was given. In the present article interest is centered on the manufacture of seamless gloves. This is a branch which has reached considerable volume of output in specialties of practical importance.

No means of protection surpasses seamless rubber gloves for hands exposed to damage and infection incident to working in dirt of all sorts, oils, acids, caustic liquids, dyes, chemicals, bacterial infection, or high voltage electric currents. Glove specialties are designed according to the service for which they are intended. They are of two general classes as to quality and cure; first, those made of pure gum, acid cured; second, of compounded stock, steam cured. The first group comprises surgeons' gloves of wrist length; obstetrical of elbow length; autopsy or undertakers', somewhat heavier than obstetrical, of elbow length, and ordinary household gloves of wrist length in various colors and weights.

The second group includes gloves of wrist length for industrial purposes. These are of heavier weight than household gloves. Acid handling gloves are very heavy, untested, and suited to severe service. Lastly come gloves of elbow length for electricians, both tested and untested. These products are usually the output of plants making a general line of druggists' rubber sundries or novelties, although there are some plants whose entire output is made by the dipping process.

The Process

In theory the manufacture of dipped goods is extremely simple, comprising drying a rubber cement on a dipping form, evaporating the solvent and acid or vapor curing the dried film on the form. In practice, given proper equipment, success with the process calls in marked degree for the exercise of cleanliness, and skill in every technical detail.

Factory Plan

In the factory plan of a dipped goods plant position should be made for the isolation of each step in the process on the score of maintaining cleanliness and order in production. A single story arrangement of rooms allowing a straight forward movement of stock in process from beginning to end is shown in Figure 1. By this plan crude rubber, compounding ingredients and pigments enter the building at one end, passing successively as processed in the milling and solution departments, storage tanks, dipping machines, finishing and curing rooms to inspecting and packing. Auxiliary to the manufacturing departments space is indicated for solvent storage and for a power and air conditioning plant.

The sloppy and sticky nature of dipping cement is such that important savings can be effected by providing for transferring the solvents and cement in systems of piping, using either gravity flow or rotary pumps, or both as the case may be.

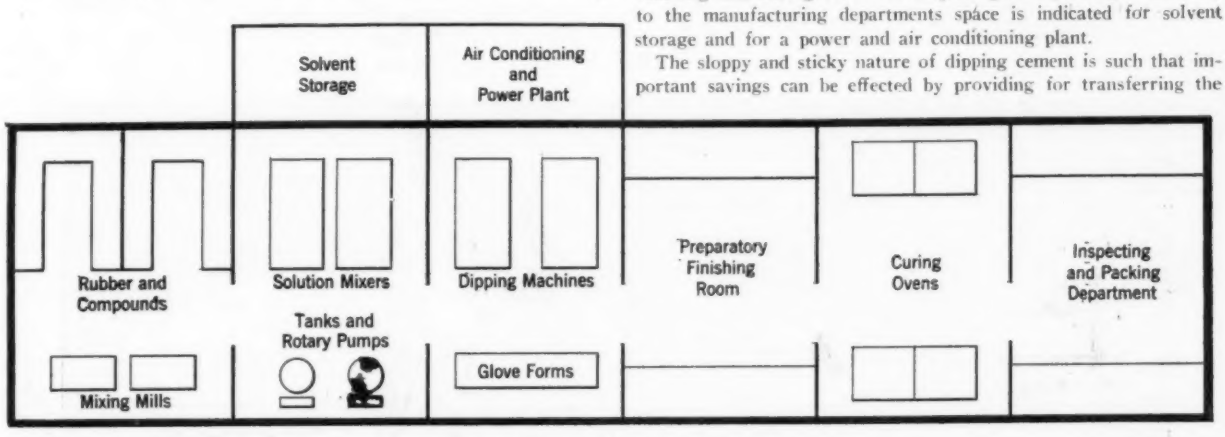


Fig. 1—Plan of Glove Dipping Plant

Material and Processes

Crude Rubber

When wild Pará grades were the cleanest rubbers available, Beni Bolivian was the choice for dipped goods because it yielded goods of superior tensile strength. First latex plantation crêpe is quite as good in this respect and unsurpassed for light colored and transparent goods.

It is essential that the rubber be clean and well dried. For pure gum goods it is broken down for not exceeding 20 minutes on a warm mill, which brings it into suitable state for solution. For compounded stock for gloves, etc., various proportions of rubber, color and lithopone are compounded together by grinding about 25 minutes on a hot mixing mill. White stock is obtained

[1] The India Rubber World, July 1, 1921, 717-721.

by means of lithopone. This pigment is also used in connection with aniline colors to dilute them and produce clear tints.

In compounded goods, such as household gloves, etc., red oxide of iron and other mineral pigments are used for coloring. Compounding for dipped goods presents simple conditions free of difficulties. Accelerators are not employed.

Rubber Solvents

The dipping solution of pure or compounded rubber should be prepared with naphtha of such a grade that it will not too readily volatilize from the dipping tanks, otherwise it will induce bubbles in the goods and will form a crusty gas-filled layer of rubber on the surface of the stock in the dipping tanks. The grade of naphtha commercially known as V. M. & P., varnish and paint makers, is very largely used. This naphtha tests 56 to 58 degrees Baumé. It has an initial boiling point of 175 degrees F. and end point of 385 degrees.

The dipped goods manufacturer needs a solvent with a very narrow range between initial and final boiling points. If this range is wide the lighter fractions will evaporate much faster than the heavy ends. This rapid evaporation of the light ends causes gas pockets on the dipping forms, and on subsequent dippings these pockets are covered and form blisters. On the other hand, the heavy ends will do as much damage by not evaporating, forming oil pockets instead of gas blisters between dips. Consequently the initial and final boilings should be properly determined and maintained for satisfactory dipping purposes.

Ideal Dipping Solvent

The ideal solvent for dipped goods will minimize costly evaporation losses in churns and tanks by elimination of the light volatile hydrocarbons while possessing an end point low enough to avoid oil blistering, yet drying so that production will not be hindered.

A solvent having an initial boiling point of 195 to 205 degrees F. and end point not above 305 degrees F. is as nearly perfect for dipped goods manufacturers' needs as is commercially possible.

In connection with the selection of solvents for rubber another important point should be considered; namely, whether or not the solvent has been made from Pennsylvania crude oil. All products from this source have a higher flash point than those made from crude from the mid-Continent or Texas areas. In Pennsylvania crude the sulphur content does not exceed 0.005 per cent, whereas in other crudes it varies between 2 and 3 per cent.

Gravity of Solvent

Many rubber manufacturers hold the misleading view that the higher the gravity of a naphtha the faster it will dry away. As a matter of fact gravity has nothing to do with whether a solvent is applicable to one process or another. Suitable evaporation characteristics are dependent on initial and end boiling points and not on gravity.

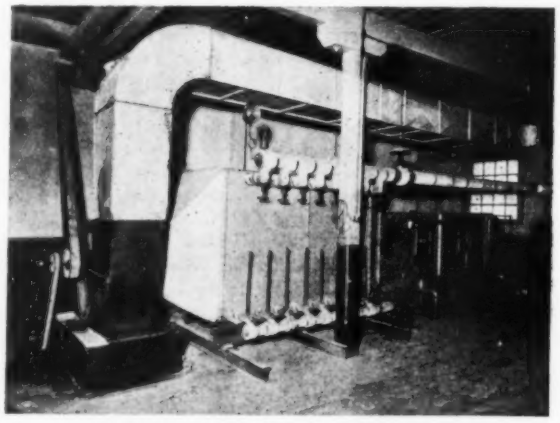
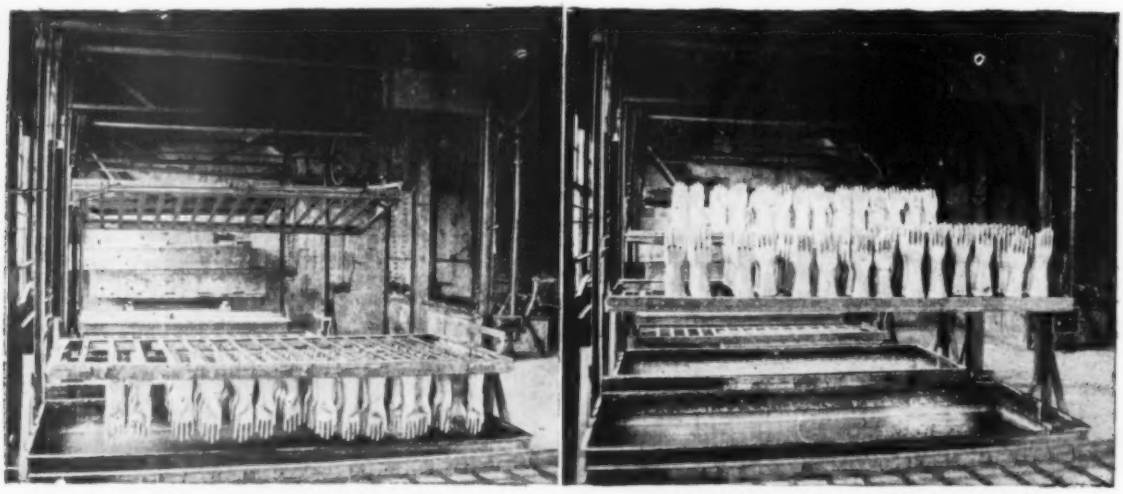


Fig. 2. Air Conditioning Equipment

Storage of Naphtha

The fire hazard of naphtha storage should be eliminated by outside underground tank storage from which the supply for working requirements can be led directly to the cement mixers, delivered by air pressure through a system of piping draining back to the tank.



GLOVE FORMS IN POSITION FOR DIPPING — DIPPED GLOVE FORMS REVERSED FOR DRYING

Fig. 3. Dipping Room

Cement Making

Various styles of machines may be employed for reducing broken down or compounded rubber to suitable dipping consistency. One of the best is the horizontal closed type. It is a tightly closed revolving apparatus, in which cement can be made of very uniform consistency because the solution chamber is sealed against loss by evaporation.

The proportion of solvent in dipping cement for balloons and

pure gum goods is 2 gallons to each pound of rubber. For compounded gloves the proportion is 35 gallons to 50 pounds of compounded rubber stock.

It is not desirable to soak the rubber before starting the mixing mechanism because that serves to mass the gum and makes it difficult to operate the stirrers. Dipping cement requires to be thoroughly dissolved to smooth consistency. This process requires 18 to 20 hours for proper completion.

Safe, clean and economical handling of cement from churn to dipping tank is effected by emptying the churn direct, by gravity, into a covered storage tank, from which it is drawn off by a rotary pump into a tank, with outlet, mounted on a platform truck. When discharged into the dip tank the cement is well and conveniently stirred by a portable flexible shaft-paddle.

Drying Conditions

The presence of naphtha in dipped goods during the cure results in a lifeless product lacking in resiliency and consequently cannot be permitted. The ideal drying conditions, 72 degrees F. and 55 per cent relative humidity, can be regularly secured only by an air conditioning system which circulates clean air under controlled conditions of temperature and humidity. A typical air-conditioning equipment is shown in Figure 2. The apparatus comprises the humidifier, heaters, fan and automatic control for both temperature and humidity.

Glove Dipping

In a dipping room the machines for dipping glove or other forms are arranged around the sides of the room, reserving space in the center for drying the finished goods. Essential features in both dipping and finishing rooms are those for saving the tacky goods from injury from dust, insects and dirt particles of every sort falling from walls and ceilings, or dust blown in through doors and windows. Plenty of sun and a well-planned system of power ventilation are important in drying the product between dippings and before curing.

Single left hand power dipping machines are shown in Figure 3. They are operated by hand-crank and link-belt. The machine is set on a fixed tank and the reversible rack holds the form boards on both sides and allows double dipping or alternate dipping and drying from either side of the rack.

Three gear-lift glove dipping machines are, however, more efficient. They are equipped with one truck to locate the cement tank under any one of the three lifts which hold the forms and raise and lower them in the process of dipping.

Dependence is placed entirely on the experience and judgment of the dipper as to the suitability of the cement for use. Loss of solvent by evaporation which thickens and crusts the cement is minimized by covering the tank during the intervals between dips and also by the addition of fresh cement or even stirring in small quantities of solvent. An interval of 2 hours elapses between dips in glove making. This wait is necessary to allow air carried down by the forms to rise to the surface, or for the escape of gas from the solvent. The interval is also needed for drying each film before adding the next.

Drying the Gloves

Following the dipping process, final drying out of the solvent before curing takes place in a well ventilated or air-conditioned room free of dust or drafts. Under variable weather conditions the time needed may vary from 8 to 24 hours. Standardization of weight of dipped goods is regulated in the dipping room by test-weighting samples stripped from forms as the dipping nears completion.

Finishing

Subsequent to dipping and drying, the goods are taken to the finishing room where beading of the edges is done by rolling the edges of the rubber back upon itself, either by hand or machine. In the case of gloves, finishing consists of applying strips of calendered rubber around the wrist as pictured in Figure 4.

Curing

Gloves are commonly cured by exposure to the vapor of sulphur chloride in an enclosed space at 180 degrees F. for an hour, more or less, depending upon the humidity of the weather. The usual dipped gloves for the use of surgeons, undertakers, and for household work are thus cured.

Gloves for other purposes are now being made by the dipping process and steam vulcanized. In fact it is claimed that the best electric glove is now made in that way from stock specially compounded for high dielectric and tough wearing quality. Such

Fig. 4. Binding and Finishing Gloves

gloves are subject to rigid inspection both before and after electrical testing for elimination of every defect.

Electrical Tests

Heavy electrical gloves are required to withstand 10,000 volts for 2 minutes without leakage of more than 8 milli-amperes. The average leakage may range from 2 to 6 milli-amperes.

Light electric gloves are required to withstand 7,500 volts for 2 minutes without exceeding the leakages allowable for heavy gloves.

Specifications

The Federal Specifications Board on November 5, 1924, promulgated United States Government Master Specification for Surgeon's Rubber Gloves—Specification 229. The following paragraphs indicate the high quality of material and workmanship required.

Gloves shall be free from coloring matter or fillers, reclaimed rubber, or substitutes. The surface shall be smooth and free from ingrained particles, blisters, thin spots or other imperfections.

Gloves shall contain at least 95 per cent by volume of best quality new wild or plantation rubber.

The tensile strength shall be at least 2,700 pounds per square inch.

The ultimate elongation shall be at least 600 per cent, 1 inch to 7 inches.

STERILIZATION. A sample shall be wrapped in gauze and subjected to 5 successive sterilizations in steam at 15 pounds pressure for periods of 20 minutes each, with intervals of 20 minutes between sterilizations. Test strips shall remain at room temperature for 24 hours before being tested. The tensile strength after this test shall be not less than 1,500 pounds per square inch.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and processes.

Rubber Tile Feature Joints

Types of Feature Joints—Various Designs in Use—Triple Joints—Method of Laying—Cutting Feature Joint Stock

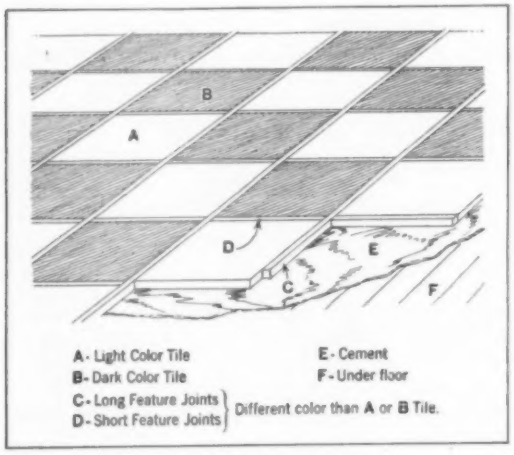
By Elmer Swanson

FEATURE joints, sometimes called interlining strips, are narrow strips inserted between the rubber tile. They are made of the same rubber composition and are the same thickness, but vary in width and length according to the design. As a rule the joints are of a different color.

When rubber tile is set with feature joints the floor design is given a distinctive character, the same as mortar joints around glazed tile or brick. A great variety of designs can be made. The most commonly used joints are black, red, white, gray and blue. As a rule, they do not run over ¼ inch for 6-inch tile, ½ inch for 9-inch, 12-inch, or larger tile. The laying of the joints is done by putting the long ones one way and the short the other way.

The joints should always be a plain color without any mottling in them, whether the rubber tile is mottled or plain. If the field or main part of the floor has feature joints these must also be included around the field, unless the border strip is the same color as the feature joints.

Where triple joints are used, the middle joints are of a different color from the other two, thus giving a very pleasing effect. Triple joint designs require two times more joints around the tile than the middle joints. For instance, figure out the amount of center joints, the same as for a one joint design, then add twice that amount for the other color joints. When laying out the work for triple joints add the three joints together, and figure as if the three were one joint. In doing this time is saved.

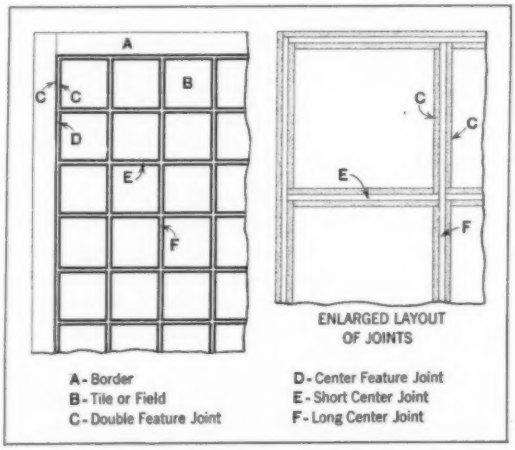


Long and Short Feature Joints

Where the feature joints go around the field, always figure one more than the number of tile. If a border strip of the same color takes the place of the joint around the field, always figure one less than the number of tile across the room. At times two and three different border strips are used. The border should always be square, never mitering the corners, for one never sees marble floors with mitered bordered corners, as there is a risk of breaking and also the waste of material is too great where a 12-inch or larger border is used and it is more expensive to install and takes more time. However, some concerns do this on small panel work.

The cutting of the feature joints is done on special rotor knife machines which cut them to the right width.

Above all things, they must be cut perfectly plumb. If they are cut slightly full on the bottom edge it leaves an open joint



Double, Center, Short and Long Center Feature Joints

on top, and if cut full on top it pushes the tile up on the end and gives an uneven appearance. A good rubber tile cutter is the most important man in the factory, for perfect cut tile saves one quarter of the time in installing.

Never undercut rubber tile. Make the knife cut as perpendicular as possible. The same applies to feature joints also. The reason for this is: should there be a heavy pressure on the rubber floor, in the case of tile which is undercut the joints will push up unless it is a weighted job, which is seldom done on rubber, as it is too expensive. Feature joints cannot be used with interlocking or lap tile.

AMERICAN RUBBER TOYS AND BALLOONS POPULAR IN ENGLAND

During 1923 the United States was the leading source of supply of rubber toys imported into Great Britain, with Germany second and Japan third. American toy balloons probably represented a large share of these imports. The following statistics were compiled by the Department of Commerce:

ENGLISH IMPORTATIONS OF RUBBER TOYS

FROM	1920	1921	1922	1923
United States	£10,511	£119	£14,613	£60,121
Germany	1,643	7,476	16,167	12,696
Japan	47,443	24,701	20,511	11,431
France	5,945	14,041	13,570	3,888
Austria-Hungary	8,036	751	2,005	2,872
Other Foreign Countries	2,883	5,793	9,057	10,610
British Possessions	.....	.....	17	15
Total	£76,461	£54,064	£76,952	£102,276

Balloon Tire Progress to Date—II

Front Wheel Shimmy and the Remedies Advanced to Control It—Studies in Motor Car Weight Distribution and Spring Characteristics—How Balloon Tires Affect Car Shipment—Standardized Sizes Needed—The Pneumatic Tire of the Future

THE preceding installment[1] of this article reviewed what the balloon tire is, why and how it was developed. It was shown that although still in a state of evolution it has made good on its merits and that most of the obstacles in the way of its general adoption have been overcome. The two outstanding disadvantages, hard steering and front wheel shimmy, were reviewed. A detailed consideration of the remedies being advanced for solving the front wheel shimmy and other problems now follows.

Progress on the Front Wheel Shimmy Problem

The most difficult motor car engineering problem which remains to be satisfactorily solved is that of front wheel shimmy, a condition which has never been altogether absent but which is considerably accentuated by the use of balloon tires with their lesser stability. Hard at work on this problem are such well-known engineers as James E. Hale, manager of the development department, Firestone Tire & Rubber Co.; R. B. Day and E. J. W. Ragsdale, of the Goodyear Tire & Rubber Co.; A. J. Baker, Overland chief engineer; L. J. D. Healy, technical supervisor, The Fisk Rubber Co.; Louis Monk, general manager, Harvey Spring & Forging Co.; D. M. Averill, Ajax Motors Corporation; E. G. Gunn, F. F. Chandler, Otto M. Burkhardt and numerous others. Much progress has already been made and it is reasonable to believe that a practical remedy for the trouble will eventually be found, although engineers are still far from agreement on several important points.

That front wheel shimmy presents one of the most pressing automotive engineering problems in connection with the use of balloon tires was convincingly shown at the October meeting of the Buffalo Section of the Society of Automotive Engineers in demonstrations arranged by the Goodyear Tire & Rubber Co. and the Budd Wheel Co. The most spectacular of these clearly indicated that balloon tire blowouts are not necessarily dangerous, provided the steering layout is properly designed. A shotgun was fired into one front balloon tire of a car running at a speed of 45 miles per hour. The tire almost left the rim, but the driver experienced no difficulty in controlling the car with only one hand on the steering wheel.

Shimmy Problem Divides Into Two Parts

Careful investigation has shown the need of dividing the problem of what has been termed front wheel shimmy into two distinct parts. First, there is what may be described as a wiggle, wobble, or rapid oscillation of the wheel about the steering axis. Second, and entirely distinct from it, there is the rapid bobbing up and down of the wheel, which has been termed tramping. Steering layout geometry and play in the linkage are responsible for the former, while the latter is more closely related to spring design and tire resiliency, for a spring can be too flexible and a tire too resilient to serve its purpose well. The Goodyear Tire & Rubber Co. claims to have solved both of these problems. The wobble is controlled by a hydraulic check, and the tramping by suitable vertical shock-absorbing devices.

The principal cause of front wheel wobble in most instances is bad steering-linkage geometry. In other words, the respective arcs of travel of the steering-arm ball and the front end of the steering gear connecting rod deviate too much from a common path. By reversing the mounting of the front spring, putting the shackle at the front end and the fixed point at the rear, this fault can be almost entirely corrected, as the two arcs will then be nearly concentric. It is not improbable that cars incorporating this radical departure from conventional design will soon be placed on the market.

Hydraulic Devices to Control Wheel Wobble

There is also a possibility that in the near future cars will not only be braked by hydraulic means, as in the most advanced type of four-wheel brakes, but that this principle will be employed to steer them as well. If the actual steering motion is not controlled by hydraulic pressure, at least there will be some application of hydraulic means to resist any tendency of the front wheels to shimmy.

Once front wheel shimmy is started, it continues for an appreciable time before it can be dampened out. This has led the Goodyear Tire & Rubber Co. to conduct extensive experiments with hydraulic dashpots or dampening devices connected to the steering crossrod in such a way as to resist rapid oscillation of this member. The device functions in a manner much the same as the conventional hydraulic doorcheck. While it is still in the development stage, its advantages have been clearly demonstrated.

It is further possible that hydraulic means may be employed to transmit motion from the steering wheel to the road wheels in such a manner as to eliminate all effect of non-concentric arcs of travel of steering knuckle and connecting-rod ends. Many investigators are now working in this direction. James E. Hale has experimented successfully with such a device. Another engineer is working on a device which, on turning the steering wheel, operates a gear pump that communicates with a cylinder and piston on the front axle. Movement of this piston causes the front wheels to move in either direction, depending on which side of the piston is under pressure.

Studies in Weight Distribution and Spring Characteristics

As to the greater degree of rebound and tramping of the wheels with balloon tires causing too much pitching action of some cars, it has been found that this is largely due to faulty weight distribution. When the weight is distributed so that the deflections of the front and rear springs for a given bump are somewhere near being equal, pitching is minimized. A car having the weight concentrated midway between the front and rear wheels, such as a coupé or roadster, usually pitches badly.

It is quite possible that further studies in spring periodicity and other characteristics may result in radical innovations in spring design and construction. Some engineers assert that the number of oscillations of a spring is affected by interleaf friction but that the time of the oscillations is not. Others contradict this and point to tests showing that the periodicity of a badly rusted spring is slower than that of a new spring.

Louis Monk, general manager of the Harvey Spring & Forging Co., states that the analysis of the steel in a spring bears no relation to its riding quality. Very good springs can be made of carbon steel if properly designed. Alloy steels merely increase the life of a spring. To produce the same riding quality result, the same weight of either alloy or carbon steel will be needed.

[1] THE INDIA RUBBER WORLD, December 1, 1924, p. 141-2.

Mr. Monk's company has developed a form of spring having a great many thin center leaves with a heavy master and a rebound leaf. Spring action is so distributed by the shape of this spring that all small bumps and vibrations are absorbed in its ends. Interleaf friction is increased by the large number of thin leaves.

Balloon Tires Affect Car Shipment

One difficulty in the adoption of balloon tires which concerns the buyer of a car not at all, but has given some trouble to the traffic departments of motor car manufacturers, is the fact that greater motion of automobiles loaded in box cars results from their being shipped on flabby low-pressure tires. This has introduced heavier blocking and caused the tires to chafe badly if proper precautions are not taken.

Shipments are termed "double-decked" when both ends of the upper automobile are supported on wooden stilts in the freight car to provide clearance for another automobile underneath. In loading Dodge cars, for example, the supporting wooden members are arranged so as to place the entire resistance to shifting of the load on the rear construction of the automobile, as this is where it is best adapted to withstand the shocks set up in transportation. When a shortage of box cars exists and it becomes necessary to load on flat cars or gondolas, a steel tripod is used to support the end of each axle, since there are no side walls to which wooden supports can be nailed. A shipment is termed "half-decked" when only one end of the automobile is raised off the car floor, this usually being the front end, since the greatest clearance underneath is obtained in this way. The supporting members in this case are similar to those used under the rear axle of cars in a double-decked shipment.

Cars loaded on the freight car floor are fastened with metal straps running over the axles, when disk wheels are used, and by rope running through the wheels when wooden wheels are fitted. The wheels are chocked fore and aft with grooved blocks that fit the contour of the tire and keep the wheel properly alined.

The Pneumatic Tire of the Future

Returning once more to a final consideration of the balloon tire itself, L. J. D. Healy probably expresses the consensus of opinion when he states that the pneumatic tire of the future will probably develop along the lines of the high-grade balloon tire; it will be a flexible tire of generous proportions and as light as possible, consistent with strength and durability. Furthermore, it will be a tire adapted to a light weight rim. This development of the tire will naturally follow the trend of car design. The trend of automobile design will no doubt be along the lines of reduced unsprung weight. This will allow lighter tires, rims and wheel construction, resulting in better riding qualities. Removal of the brakes from the wheels to the spring portion of the chassis, together with lighter axles and wheels, will permit the lighter and more flexible tires. This should in turn give added comfort, durability and efficiency. Thus the automobile engineer, the spring engineer and the tire engineer working in unison, will no doubt some day evolve the long-looked-for comfortable, high speed, economical, light weight car.

Low Priced Tires Do Not Pay

All tires now made by the more responsible companies contain practically the same quantity of rubber and cotton, and have about the same wearing qualities. There is little difference in the quality of single and double-cured tires, the former construction being much favored. The practice of making two grades of tires does not seem likely to continue. There is no economy in buying the cheaper grades, although they are in demand for used cars. In general, however, the public wants the best tire that can be bought. Cheaper grades or fewer plies of cotton are used to reduce the manufacturing cost of low-priced tires. Rubber is still so low in cost that it does not pay to adulterate it or use reclaimed rubber. Cord fabric now costs about 60 cents per pound and rubber more than half that. Although there is more fabric than rubber in a tire, the fabric represents nearly half the material cost.

Standardized Sizes Needed

The biggest and most important task before the Society of Automotive Engineers today is the much needed standardization of balloon tire sizes. It is a matter of the greatest moment to the entire automotive industry. Only by concerted action on the part of both tire and motor car engineers can it be accomplished. Neither the tire nor the motor industry can bring it about alone. The Society of Automotive Engineers represents both and the effect of the Society's conclusions on any detail in any branch of the automotive industry is far reaching. Tire manufacturers hope to bring about a reduction of balloon tire sizes as a step toward building first-quality tires for less money. Thus far motor car manufacturers have raised serious objections to any considerable reduction in the number of sizes, but it is believed that the two factions will get together before long on a reasonably restricted program.

REASONABLE CARE OF BALLOON TIRES

It is believed that the "balloon" casing represents the most important and successful improvement in tires since the introducing of cord construction ten years ago. Extravagant claims, however, are being made in some quarters for these low pressure casings, and the advertising pages of some trade journals abound in illustrations showing the tire undergoing every conceivable form of abuse. As a result, motorists have in good faith attempted to use balloon tires under these impossible conditions, and have then been outspoken in their criticisms.

The balloon casing cannot be expected to work miracles. It is nothing more than a logical, progressive development of the regular pneumatic tire to the point where lower inflation pressures may be safely and profitably used. Like any other type of tire the balloon casing can be bruised; it can be cut; it can be punctured; it must be kept properly inflated; it must not be overloaded; and front wheel alinement must be maintained.

Under correct operating conditions, however, the low pressure tire will give the easiest riding qualities ever known; superlative braking and traction; freedom from skidding; the car will look better and will last longer, and motorists will get as much mileage as from regular cord tires.—United States Rubber Co.

TIRE RIM ASSOCIATION REPORT OF RIMS INSPECTED AND APPROVED

Size	OCTOBER, 1924 Number	Per Cent	Size	NOVEMBER, 1924 Number	Per Cent
CLINCHER RIMS			CLINCHER RIMS		
28 x 2½	623	0.0	28 x 2½	None	
24 x 3	228	0.0	24 x 3	2,050	0.1
26 x 3	4,726	0.3	26 x 3	5,366	0.4
30 x 3	106,143	7.0	28 x 3	279	0.0
30 x 3½	703,936	46.4	30 x 3	24,824	1.8
31 x 4	21,625	1.4	30 x 3½	736,218	52.5
STRAIGHTSIDE RIMS			31 x 4	3,102	0.2
27 x 3½	775	0.1	STRAIGHTSIDE RIMS		
28 x 3½	50,750	3.4	28 x 3½	96,136	6.5
29 x 3½	21,694	1.4	29 x 3½	216	0.0
30 x 3½	90,027	5.9	30 x 3½	56,613	4.0
32 x 3½	3,821	0.3	32 x 3½	1,771	0.1
28 x 4	107,117	7.1	28 x 4	112,431	7.2
29 x 4	21,017	1.4	29 x 4	22,735	2.0
30 x 4	35,271	2.3	30 x 4	33,199	2.3
32 x 4	43,020	2.9	31 x 4	533	0.0
33 x 4	6,294	0.4	32 x 4	16,845	1.2
34 x 4	1,117	0.1	33 x 4	495	0.0
29 x 4½	5,314	0.4	29 x 4½	9,685	0.7
30 x 4½	58,805	3.9	30 x 4½	71,819	5.0
31 x 4½	47,579	3.1	31 x 4½	32,379	2.3
32 x 4½	74,012	4.9	32 x 4½	85,778	6.0
33 x 4½	747	0.0	34 x 4½	670	0.0
34 x 4½	12,154	0.8	30 x 5	23,933	1.7
30 x 5	28,660	1.9	31 x 5	28,799	2.0
31 x 5	13,744	0.9	TRUCK RIMS		
33 x 6	1,631	0.1	30 x 5	38,047	2.7
TRUCK RIMS			34 x 5	11,852	0.8
30 x 5	41,499	2.8	32 x 6	2,185	0.2
34 x 5	6,569	0.4	36 x 6	2,672	0.2
32 x 6	2,997	0.2	34 x 7	434	0.0
36 x 6	1,337	0.1	38 x 7	432	0.0
34 x 7	690	0.0	36 x 8	402	0.0
36 x 8	362	0.0	40 x 8	837	0.1
46 x 8	460	0.0			
38 x 7	2,097	0.1			
Totals	1,516,808	100.0	Totals	1,422,737	100.0

Dealers' Stocks of Automobile Tires[1]

Stocks of April 1 and October 1 Compared—Analysis of Stocks—Number of Tires and Tubes in Dealers' Hands—Volume of Stocks—Group Analysis

A SURVEY by the Department of Commerce of the stocks of automobile tires and inner tubes held by dealers in the United States on October 1, 1924, shows that the average dealer can enter the fall and winter season with stocks apparently down to normal. A total of 26,181 dealers had 1,402,879 casings on hand, as compared with 1,648,993 casings held by 17,797 dealers on April 1, 1924. In other words, each dealer had an average of 53.6 casings on hand in October, as compared with 92.6 casings in April.

Of the 26,181 dealers reporting automobile casings on hand, 25,497 reported high-pressure casings; 8,305 reported stocks of balloon tires, and 664 dealers reported balloon casings without having high-pressure casings also. The compilation compares as follows with an unofficial compilation as of April 1, 1924, not made by the Department of Commerce:

The sharp decline shown in the average number of casings per dealer is due in part to the fact that a higher percentage of dealers with small stocks reported in October than in April, and also to the fact that from a seasonal viewpoint October stocks are normally reduced well under those of springtime. The accompanying analysis of the 25,497 reports received on high pressure casings shows that a larger percentage of small dealers reported stocks in October than in April:

Representative rubber trade experts consider the stocks of tires reported as a supply sufficient for six to eight weeks at the current rate of consumer buying for the number of dealers reporting. What percentage of the total number of tire dealers responded to the questionnaire is unknown, but rubber trade experts believe there are about 100,000 active tire dealers. Assuming this to be true, and that the dealers reporting are representative of the whole, there were about 5,300,000 casings in the hands of dealers on October 1, 1924.

Herewith is given a tabular statement showing by states the stocks of balloon tires, high-pressure tires, and inner tubes in the hands of the dealers reporting. The number of dealers reporting each item from each state is shown, and the average number of high pressure casings and inner tubes per dealer is included for convenient reference.

DEALERS' STOCKS OF AUTOMOBILE CASINGS

	October 1, 1924			April 1, 1924 (Unofficial)		
	No. of Dealers Reporting	No. of Units on Hand	Average Per Dealer	No. of Dealers Reporting	No. of Units on Hand Separately Reported	Average Per Dealer Reported
Balloon casings	8,305	135,366	16.3	Not Separately	Not Separately Reported	
High pressure casings	25,497	1,267,513	49.7	Not		
Total casings	26,161	1,402,879	53.6	17,797	1,648,993	92.6
Inner tubes	27,480	2,197,553	79.9	Not	2,388,796	....

NUMBER OF DEALERS ACCORDING TO VOLUME OF STOCK

Casings	Total Dealers Reporting: October 1, 1924 Per cent	April 1, 1924 (Unofficial) Per cent
Less than 10	23.19	12.7
From 10 to 25	32.11	22.1
From 26 to 50	22.65	21.2
From 51 to 100	13.70	23.5
From 101 to 200	5.49	11.8
From 201 to 300	1.44	3.7
From 301 to 400	.52	1.6
From 401 to 1000	.64	2.4
Above 1000	.26	.8
Total	100.00	100.00

STOCKS OF AUTOMOBILE TIRES IN HANDS OF DEALERS, OCTOBER 1, 1924

States	Balloon Tires: No. of Dealers Reporting	Balloon Tires: No. of Tires on Hand	High Pressure Tires: No. of Dealers Reporting	High Pressure Tires: No. of Tires on hand	High Pressure Tires: Average Number per Dealer	Inner Tubes: No. of Dealers Reporting	Inner Tubes: No. of Tubes on hand	Inner Tubes: Average Number per Dealer
Alabama	98	2,377	233	13,002	55.8	246	30,074	122.3
Arizona	45	555	112	3,911	34.9	111	8,128	73.2
Arkansas	101	1,495	302	10,189	33.7	340	18,681	54.9
California	505	14,336	1,364	107,064	78.5	1,352	148,754	110.0
Colorado	132	1,833	401	20,472	51.1	437	31,867	72.9
Connecticut	106	2,110	296	12,683	42.8	323	21,921	67.9
Delaware	15	282	43	2,270	52.8	69	5,599	81.1
Dist. Columbia	17	195	41	2,001	48.8	44	5,428	123.4
Florida	102	2,052	242	13,659	56.4	254	25,985	102.3
Georgia	116	1,524	344	16,852	49.0	383	32,754	85.5
Idaho	56	634	141	5,348	37.9	147	9,449	64.3
Illinois	400	4,727	1,288	71,779	55.7	1,383	118,560	85.7
Indiana	326	4,187	872	45,560	52.2	1,038	78,884	76.0
Iowa	270	3,003	886	41,743	47.1	932	68,018	73.0
Kansas	254	2,885	767	34,286	44.6	805	54,598	67.8
Kentucky	105	1,173	279	12,937	46.4	306	22,535	73.6
Louisiana	68	866	203	9,987	49.2	224	18,803	83.9
Maine	77	1,206	365	9,829	26.9	397	16,831	42.4
Maryland	84	1,239	276	16,781	60.8	309	21,383	69.2
Massachusetts	143	2,890	751	45,166	60.1	833	81,692	98.1
Michigan	344	5,200	934	41,119	44.0	988	68,451	69.3
Minnesota	335	2,357	871	34,613	39.7	945	63,186	66.9
Mississippi	75	710	246	9,226	37.5	269	18,030	67.0
Missouri	231	5,818	888	58,907	66.3	962	78,819	81.9
Montana	62	606	225	8,906	39.6	232	14,565	62.8
Nebraska	198	2,518	481	29,017	60.3	514	43,779	85.1
Nevada	8	60	22	916	42.4	22	1,601	72.8
New Hampshire	56	529	198	6,145	31.0	210	13,070	62.2
New Jersey	194	2,706	468	18,682	39.9	508	40,700	80.1
New Mexico	41	436	146	4,892	33.5	144	8,662	60.1
New York	494	10,255	1,646	94,133	56.6	1,799	172,860	96.1
No. Carolina	121	1,510	374	17,076	45.7	407	43,336	106.5
No. Dakota	50	343	345	7,977	23.1	382	14,919	39.1
Ohio	527	8,864	1,402	65,099	46.4	1,515	119,959	79.2
Oklahoma	183	7,370	487	20,763	42.6	500	44,563	89.1
Oregon	122	1,450	344	22,728	66.1	306	25,328	82.5
Pennsylvania	643	9,804	2,010	93,410	46.6	2,203	157,010	71.3
Rhode Island	22	245	75	3,061	40.8	83	5,175	62.3
So. Carolina	177	1,006	257	8,105	31.5	285	18,189	63.8
So. Dakota	105	988	353	11,346	32.1	387	20,598	53.2
Tennessee	89	3,339	276	16,526	59.9	326	33,835	103.8
Texas	323	5,666	984	61,253	62.2	1,053	118,227	112.3
Utah	43	892	122	4,847	39.7	136	10,392	76.4
Vermont	39	502	173	4,680	27.1	181	8,919	49.3
Virginia	127	1,600	523	19,859	38.0	583	48,672	83.5
Washington	178	3,116	460	19,576	42.9	489	33,430	68.4
W. Virginia	58	1,148	251	8,570	34.1	291	19,877	68.3
Wisconsin	234	2,476	933	31,585	37.9	871	53,082	60.9
Wyoming	28	349	103	3,386	32.9	108	5,961	55.2
Unallocated	278	3,934	794	45,491	57.3	848	72,484	85.5
Total	8,305	135,366	25,497	1,267,513	49.7	27,480	2,197,553	79.9

Number of Dealers According to Stock Volume

Of the 25,497 dealers reporting an aggregate stock of 1,267,513 high pressure pneumatic casings, 8,189 dealers, or 32.1 per cent, reported stocks of 10 to 25 casings; 5,913 dealers, or 23.2 per cent, reported stocks under 10 casings; 5,777, or 22.6 per cent, reported stocks of 26 to 50 casings. Only 366 dealers carried stocks of over 200 casings; only 162 dealers carried over 400 casings; and only 66 dealers carried over 1,000 casings. It is a significant fact that about 56 per cent of the dealers had

[1]Special Circular No. 651, Rubber Division Department of Commerce, Washington, D. C.

stocks of only 10 to 50 casings, or a total of only 27.5 per cent of the total number of casings reported. Assuming that the turnover by each class of dealers is equally rapid, the amount of business done by each group would bear approximately the same ratio as the stocks on hand. Obviously, the manufacturers' sales and overhead cost of covering so many dealers who stock so few tires, and who accordingly do a restricted volume of business, must be disproportionately high.

Group Analysis of Dealers' Stocks

An analysis by states of dealers' stocks of pneumatic casings indicates the extent to which reports from a few individual large dealers have given the "average casings per dealer" figures a misleading value. The effect is particularly marked in California and Missouri, where, by leaving out of consideration dealers with stocks of over 1,000 tires, the average number of casings per dealer for California would be reduced from 78.5 to 41.6, and for Missouri from 66.3 to 40.5.

Solid and Cushion Tires

Solid tires to the number of 30,538 were reported in stock by 1,449 dealers, or an average of 21.1 solids per dealer. Cushion tires to the number of 24,020 were reported by 1,415 dealers, or an average of 17 cushions per dealer. It is believed that some dealers have erroneously included high pressure pneumatics under this heading, as an unofficial compilation on April 1, 1924, showed a ratio of four solids to one cushion. The error is not sufficient, however, to affect materially the pneumatic casing figures.

Makes of Tires

Over 76 per cent of the dealers reported not more than two makes of tires in stock, indicating a higher degree of specialization than had been generally believed to exist. Only 4.2 per cent of the dealers reported over four makes of tires in stock.

Analysis of Dealers

Of the 27,480 dealers reporting in this survey, 21,917 sell automobile accessories; 21,555 sell gasoline and oil; 10,768 sell automobiles; and 7,797 sell general hardware. Only 4,824 dealers, or 17.5 per cent of the total number, were firms specializing in the tire business, and only 3,734 dealers, or 13.6 per cent, have facilities for vulcanizing tires.

"TRADE DAYS" NEW FEATURE OF AUTOMOBILE SHOW

While celebrating the twenty-fifth anniversary of their organization, the National Automobile Shows of the country will also introduce during 1925 a new feature by devoting the two opening days exclusively to the interests of the industry and the trade. In accordance with this plan, the New York show grants free admission to men in the trade from January 2, 10 a. m., to January 3, 7 p. m., the public being admitted during the entire week following. The Chicago show extends from January 23 to January 31, maintaining the same innovation as the New York exhibit. It is believed that under the new plan there will be a better serving of the interests of the manufacturers, wholesalers, retailers, and service men, and a better attendance of those representative of the trade.

CANADIAN EXPORTS OF TIRES AND TUBES

During the first six months of 1924 Canada's exports of tires and tubes were valued at $3,189,711. The exports of pneumatic tires amounted to 256,412, value $2,659,754; tube exports totaled 277,372, value $409,508; solid tires 6,014, value $120,449. The United Kingdom, New Zealand, British South Africa, and Australia were the leading markets for pneumatic tires and tubes, while the principal destinations for solid tire exports included the Dutch East Indies, Japan, United States, and New Zealand.

National Tire Dealers' Resolutions

The following resolutions were adopted by the National Tire Dealers Association at the fifth annual meeting, held November 18-20, at Akron, Ohio.

1—Be it resolved that the members of the N. T. D. A. shall encourage only those manufacturers whose policy coincides with the views of the N. T. D. A. and discourage in every way possible those manufacturers whose policies are opposed to our interests.

2—Resolved that all adjustments shall be made to the dealers based on the dealer's cost.

3—Resolved that a central bureau of information be created at N. T. D. A. headquarters where all legitimate complaints shall be welcomed and considered and those of sufficient importance, after proper censorship, shall be broadcasted.

4—Resolved that we protest against the practice of tire manufacturers engaging in or owning or being financially interested in retail tire stores.

5—Be it resolved that a budget committee be appointed by the President.

6—Be it resolved that the President, with the consent of the Executive Board, shall appoint a member or representative to visit prospective locales or individuals for the purpose of organization and designate the compensation for such service.

7—Be it resolved that we define the "Tire Dealer" under the following classifications, to be recognized as such by manufacturer, dealers and in fact everybody.

AA Dealer—A tire dealer who qualifies by carrying a complete stock of tires, tubes and renders efficient service and who represents one or two makes of tires.

A Dealer—A dealer who shall qualify by carrying more than two makes of tires and tubes and rendering efficient service.

B Dealer—Shall be designated as one who is engaged in any other line of business, carrying tires and tubes as a side line, for resale purposes. This classification would include the car agent.

8—Resolved that we appreciate the efforts of the manufacturers to entertain our conventions and suggest that they keep within bounds so as not to defeat the purposes of our organization.

9—Resolved that we appreciate the efforts of the Akron Local Tire Dealers' Association and all other agencies or individuals who have contributed so generously toward making this convention a success.

10—Resolved that a vote of thanks be extended to all the members of the executive board who have so loyally and unselfishly supported the organization and as a special tribute to our President for his untiring efforts during the past two years of office for which he has received no substantial recompense we present him with a check forthwith drawn from the National Association treasury for the sum of One Thousand Dollars ($1,000).

11—Resolved that some effort shall be made to amortize bonds held by members and that as a first step in this direction, we accept as full payment for life membership, bonds to the amount of $50.00, from those members who are willing to do so.

The departments in the National Board and the director assigned to each division follows:

GRIEVANCES. A. Roderick, 634 South High Street, Akron, Ohio.

ORGANIZATION. H. A. Ruhnke, 509 Broadway, Milwaukee, Wisconsin.

TRUCK TIRES. J. W. Waber, 3500 Michigan Avenue, Chicago, Illinois.

FINANCE & BUDGET. P. J. Quigley, 721 Union Street, Memphis, Tennessee.

RESOLUTIONS & RECOMMENDATIONS. H. L. Alden, 3808 Park Avenue, Minneapolis, Minnesota.

PUBLICITY. C. D. Manville, 436 Wood Street, Pittsburgh, Pennsylvania.

President Burger suggests that members should communicate with the director in charge on matters relating to his department.

Rubber Machinery Depreciation

Machinery Deterioration Shown by Graphs—Depreciation Charts—How They Are Used—Valuable in Considering Repairs and Maintenance—Machine Values Visualized

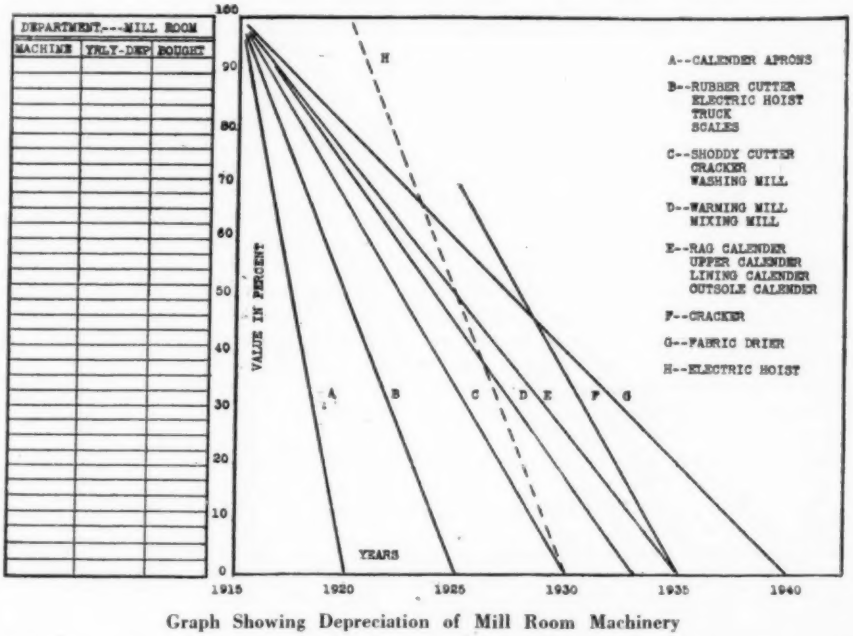
By Rhodes Polleys

MODERN business with its keen price competition makes it important for the rubber manufacturer to know at all times where he stands from a cost standpoint. To successfully operate a rubber factory today not only must technical knowledge of manufacture be had but in addition it is necessary for the executive to understand the general accounting methods which are used to keep track of the dollars' and cents' side of the business.

Machinery Depreciation Important Item

Depreciation of factory machinery is one of the important items brought to the attention of every manufacturer and it is the purpose of this article to suggest a method by which rubber executives might have this information conveyed to them more clearly. This can be done by the use of graphs.

Graphical charts have found many uses in their application to the business as well as the scientific world and no one can deny that the actual picture which they present to the eye makes for more complete understanding than one which is left entirely to the imagination.



Graph Showing Depreciation of Mill Room Machinery

It is not the intention of the author to show any complicated method of writing off depreciation with a varying percentage each year, but rather to take an equal percentage and estimating the minimum life of the machine, to write off an equal amount yearly up to the so-called stop point.

This stop point is the date at which the actual writing off of the depreciation ceases and in many instances of machinery it is reached when about 20 per cent of the installed value is left on the books. After this date no further yearly depreciation is set aside and the machine is simply valued at the remaining book value as long as it remains of use.

Let us take the typical rubber factory of today and see how such charts might be prepared to show machinery depreciation and also how they might be made use of in the business. The most logical way would be to consider the factory as being divided into its various departments and take the machinery in each one as a unit.

Depreciation Charts

The illustration shows a depreciation chart as it might be applied to the mill room department of the factory and it covers mills, calenders, etc., such as one finds in almost any rubber plant. The stop points of the various machines could be plotted for each machine separately, but having in mind the idea of keeping the charts as simple as possible, these have been purposely omitted in this discussion. We will therefore consider the machine values as being written off to a zero percentage.

There are two purposes accomplished by the chart as applied to the department's machinery: One, a means is provided for actually jotting down the figures governing the rate of the machines' depreciation, and the other, to present to the executive a clear picture, by straight line graphs, of the depreciation resulting from plotting the figures. The former is provided for by means of the work sheet shown at the left of the chart proper and the latter by the chart. Various items of importance, such as the amount of yearly depreciation written off, date machine was installed, etc., are provided for by the blank spaces under the various headings on the work sheet. These can be added to or altered to suit individual requirements as needed.

The chart itself has two variables, the vertical lines representing percentage values, and the horizontal lines representing years of operation. In the case plotted for an example, a plant starts out in 1915 with a full line of new mill room machinery. By consulting the chart it can be seen that calenders, mills, conveyors, etc., are all valued at 100 per cent of their installed cost and are ready for their yields of toil.

The various lines running off at different angles from the 100 per cent point show the rate of depreciation of the individual machines; the steeper the angle, the more rapid the depreciation. The line running down to the year 1920 and noted by the letter A shows that at the end of five years it will be necessary to have written off of the books the installation cost of the equipment in question. Similarly it can be seen that the calenders are allowed 20 years to depreciate. A fixed percentage which is predetermined is therefore written off each year in order to be ready for replacement.

Additions to Equipment

Occasionally a plant expands to such a degree that additional machinery is required. The dotted line indicated by letter H shows how such additions can be handled. The case illustrated by the dotted line represents the purchase in 1920 of a new electric hoist for roll changing and it can be seen that it is plotted for a ten-year life in order that the company may be ready to replace it by 1930. Similarly, a second-hand cracker which was bought and appraised at 70 per cent of its new market value was added in 1925. This machine is expected to serve the buyer for 10 years, as shown on the chart by the solid line lettered F, which runs from years 1925 to 1935.

Many pieces of mill room equipment, such as lining calenders, mills, etc., have more than outlived their estimated life and are still frictioning linings and carrying on after thirty-five and even forty years of service. These old timers owe their masters nothing as money has already been credited to reserve for their replacement and, unless repairs and maintenance are running high, each added year of service can be considered as so much velvet for their owners.

Uses of the Chart

Perhaps after reading so far the reader will begin to wonder what it is all about and to what practical uses such records may be put. The charts have many uses and if similar ones were prepared for the allied departments of the mill room, such as the cutting, fitting-up, making, heater, and other departments, ready reference could be had at all times for determining the financial value of the machinery in each department. This comes in handy when, for example, a whole department is being considered for abandonment in favor of a new line of machinery for handling similar work.

With these charts at the executive's elbow, he is prepared to answer necessary questions in time of contemplated financing or to carefully weigh the advisability of purchasing new machinery. A glance at the chart will show almost instantly that certain machines are nearing the days of high repairs and maintenance and that provision must be made to replace them from reserve if the same rate of production is to be maintained.

A Check on Repairs and Maintenance

Another use of such charts is the cross check that can be made on repairs and maintenance. For example, suppose that an executive is considering many replacement orders for such parts as cracked rolls on the calender, or new bearings on the mixing mill. By reference to the chart the estimated condition of the machine's value can be noted and if the machine has but little depreciation written off and is comparatively new, something must be wrong. The case is investigated and poor supervision in warming up or lack of proper mechanical attention might be unearthed, with the result that needless expense is halted.

There are times when frequent repair bills are being paid on the same machine that if reference were had to the chart it might show that owing to unforeseen conditions the machine was not standing up to its work and that an insufficient rate of depreciation was being written off. Accordingly the rate of depreciation should be increased and the curve on the chart steepened.

Values Easily Determined

The vertical lines on the chart running up from any year will give very close approximations of the scrap or second-hand values at which one can afford to dispose of old equipment. Reading from the chart in 1924, it can be seen that the shoddy cutting machine, cracker, etc., are worth approximately 40 per cent of their installed cost; rag calender and upper calender at 55 per cent, etc. This is particularly useful in the period through which we are now passing, when replacement of comparatively new machinery is made compulsory because of new and speedier machines which our competitor has installed for similar work.

A set of depreciation charts can be prepared on tracing cloth in order to make changes or additions possible, and blue prints for everyday use can be struck off as needed.

Preparedness is the keynote of most success and in our business as well as private life we dislike to be called upon for unforeseen expenditures. Perhaps this discussion will help fortify and prepare some of us against the shocks of unexpected machine replacements.

The Plantation Rubber Industry

Capital and Ownership—Production Areas

Excluding the capital value of small native holdings in Middle Eastern areas of the British Empire, it is computed that no less a sum than £150,000,000 sterling is invested in rubber companies, and that there are 250,000 shareholders. Of the total capital, about half appertains to British Malaya alone. The following table shows the ownership of plantation rubber in the East:

	Acres
London controlled	1,110,000
Dutch, French, Belgian, Swiss	885,000
Asiatics	850,000
Local companies and resident European proprietors	800,000
American	100,000

The world's shipments of rubber in 1923 amounted to 412,771 tons. Of that total, Brazil contributed 22,580 tons, wild rubber 5,420 tons, and plantation rubber 384,771 tons. The shipments of plantation rubber, according to W. H. Rickinson and Son's compilation, were as follows:

	Tons
British Malaya*	252,146
Java and Madura	34,100
Sumatra (E. Coast)	45,930
Ceylon	37,079
Rest and adjustments	15,496
Total	384,771

* Includes 68,203 tons imported from Dutch Indies, Cochin China, etc.

British Malaya's percentage of the world's total (after allowance has been made for wet rubber) was 47.9, Ceylon's 9, India's 1.5, Dutch Indies 30.4, other plantations 4.5, Brazil's 5.4, and wild rubber 1.3 per cent.

Against world shipments of rubber in 1923 amounting to 412,771 tons (384,771 plantation), the figures for the four years preceding were as follows:

	World Tons	Plantation
1922	379,920	354,980
1921	293,960	271,233
1920	343,731	304,816
1919	381,860	340,225

RUBBER PLANTATION AREA

Percentage	Country	Total Planted Acres	In Bearing*
56.8	Malaya	2,230,000	1,672,500
10 5	Ceylon	410,000	307,500
3.2	India	127,000	95,250
25.4	Dutch Indies	1,000,000	750,000
4.1	Rest	160,000	120,000
100.0		3,927,000	2,945,250

*Seventy-five per cent of planted acreage.

According to a compilation prepared for the Federation of British Industries, the average issued capital of the companies which are members of the Rubber Growers' Association is just over £150,000, and the average of such capital per planted acre is about £62.—*Financial Times*, London.

Manufacture of Automobile Brake Lining[1]

Volume of Annual Requirements of Brake Lining—Types of Brake Lining—Materials and Processes of Manufacture—Comparative Service Value of Solid Woven, Folded and Stitched Brake Linings

ASBESTOS brake lining was first devised to meet the need of an efficient friction lining for the brake bands of automobiles. Its development and production have kept pace with the rapidly increasing demand of the automobile industry until in the past year there have been made approximately 70,000,000 feet of brake lining for new vehicles and for replacement on old ones. It is customary to estimate the annual output of brake lining, in feet,

Fig. 1. Splitting Frictioned Asbestos Fabric

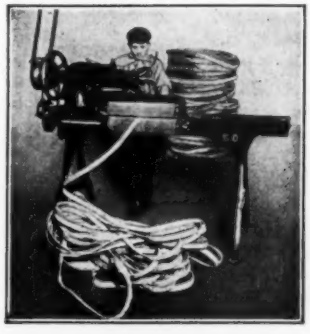


Fig. 2. Stitching Machine

at 10 times the year's car and truck production for new equipment and add to this figure 75 per cent to provide for replacement requirements.

Brake lining widths vary from 1 inch to 6 inches and thicknesses from ⅛ to 5/16 inch. The combinations of widths and thicknesses comprise a total of 108 sizes.

Automobile brake linings are of two distinct types, each of which has its merits. Both are largely of asbestos and both are extensively used. The original type was the ordinary solid woven asbestos tape impregnated with a binder indurated under heat and pressure. The second type is known as "folded and stitched" brake lining. It is of particular interest as a specialized rubber product of asbestos and rubber. As its designation indicates, the latter type bears a certain resemblance to stitched rubber belting both in structure and method of making.

The severe duty which brake lining must perform without disintegrating under the heat generated in stopping a heavy machine quickly, makes necessary the use of the toughest long fiber asbestos put into the most wear-resisting form. In the best linings only the longest and toughest Canadian asbestos fiber finds a place, and in 200 pounds of asbestos rock mined there is only sufficient long fiber secured for a single brake lining. The remainder and all short fibers find appropriate uses in many other asbestos products, such, for example, as molded articles.

Asbestos Fabric

The process of handling the asbestos fiber somewhat resembles that for textile fibers. The fibers are carded, spun and drawn into yarns. The yarns destined for weaving into asbestos cloth for brake lining is formed by spinning it around a fine brass wire to give continuity to the yarn and strength to the fabric. The fabric is woven from such asbestos-wire yarns with just enough cotton to assist the process. If too much cotton were used the fabric would not properly resist heat; if too little, the loom would not weave the fabric properly.

After obtaining properly woven asbestos fabric the first step in the production of folded brake lining is to thoroughly dry the fabric, otherwise a homogeneous, dense brake lining cannot be made. Fabric drying, in this case, is done by the usual steam heated can or cell driers immediately preceding rubber coating.

Graphnalizing and Splitting

From the drier the asbestos fabric is transferred to a heavy rubber friction calender. By its passage through this machine its structure is thoroughly filled, coated and made adhesive with a special heat-resisting rubber composition called "Graphnal."

Removal of selvages and cutting the friction coated fabric into suitable widths for various sizes of brake lining is done by disk cutting knives as the fabric is passed through the machine pictured in Figure 1.

Folding the Strips

The cut strips are next machine folded to exact widths of varying numbers of plies. This is accomplished by adjustable wide flanged sheaves or pulleys between which the single fabric layer is drawn and folded lengthwise upon itself into a plied band resembling a length of rubber belting. The adhesion of the folded fabric is increased by compression of the plies as it passes through two sets of heavy rollers after being folded to width.

Stitching

As soon as folded the unvulcanized bands are ready for stitching to still further secure the plies, especially during manufacture. Stitching is done on a power sewing machine exactly as in making rubber belting, a two-needle lock stitch machine being used, as shown in Figure 2. The brake lining at this point is ready for compacting and curing in a heavy hydraulic press, and is handled much as belting is, but without stretching.

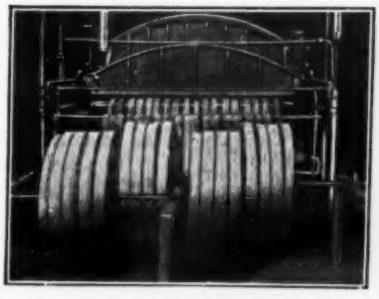


Fig. 3. Hydraulic Press

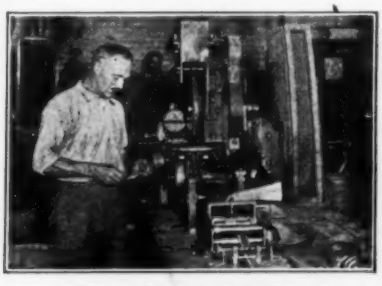


Fig. 4. Stamping Machine

Pressing

The uncured lining is converted into a dense, homogeneous band which cannot be unraveled and will resist wear, by compression

[1] Data and illustrations from the Thermoid Rubber Co., Trenton, New Jersey.

under high pressure and heat in a heavy hydraulic press, such as represented in Figure 3. Here the lining is compressed forty per cent in thickness and cured for an hour at 320 degrees F.

Immediately following the press curing comes inspecting, marking, measuring, and winding into rolls containing the desired number of feet. This work is done rapidly on the machine pictured in Figure 4. The relative density of the two types of brake lining is well shown in Figure 5, in which the thickness of the folded and stitched construction before compression is indicated by the dotted line. The final resulting thickness is the same as that of the uncompressed woven lining. The greater compactness of the former and its vulcanized bonded ply structure give it marked advantage over the latter in the matter of service value.

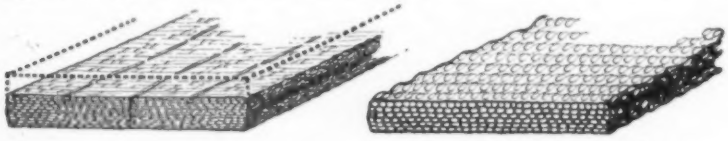


Fig. 5. Compressed and Uncompressed Brake Lining

An instructive comparison of the textures of the two types of brake lining is represented in Figure 6. Here the loose open texture of woven lining is contrasted with the compact texture of the folded and stitched type. The comparative wearing quality of both types is perfectly evident. In fact, the difference in wear resistance is rated as high as 400 per cent in favor of the compressed lining, the longer wear being due to the heat resisting qualities of Graphnal.

The difference in density is further shown by the fact that 100 feet of compressed brake lining will weigh 54½ pounds, while 100 feet of the same size in woven brake lining will weigh only 34¼ pounds.

Cut Lengths of Lining

Fig. 7. Utility Brake Lining Cutter

The usual practice of furnishing brake lining stock to users in rolls has some disadvantages for the automobile manufacturer and service station because of the end waste on every roll and the difficulty that the nature of the material presents, particularly the hard cured consolidated folded and stitched variety.

Brake lining manufacturers now find a source of profit in cutting their product to specification lengths guaranteed as to accuracy of dimensions and squareness of ends.

A machine for this work which also is convenient for other rubber cutting purposes illustrates in Figure 7 the segment gear and adjusting device for measuring lengths of the stock. The machine has a cutting width of 12 inches and automatically measures and cuts from a ½-inch length up to 49 inches, delivering the pieces at the rate of 30 cuts a minute. In the case of narrow stock several strips may be fed at the same time, still further hastening the output in pieces delivered.

Engineering Ideals

The ideals of brake lining quality are: (1) It must resist oil or grease, at least to the extent of being impervious to them; (2) it should be equally repellent to water, which acts as a lubricant to rubber, and for that reason only a minimum quantity of rubber is used in a high class compressed brake lining; (3) the material used must possess a high coefficient of friction, that will neither burn nor be partially destroyed by the heat of the friction; (4) great resistance must be offered to compression and wear to secure uniform friction grip and durability of service.

The test of practical brake service conditions has demonstrated that no combination meets the requirements as well as long fiber asbestos with its structure intimately filled with heat resisting composition, heavily compacted and vulcanized into a dense homogeneous structure under heavy hydraulic pressure. The efficiency of a brake lining of this description is illustrated by the fact that cars with two wheel brakes speeding 50 miles an hour can be stopped in 231 feet and with four wheel brakes at the same speed in 154 feet.

Fig. 6. Structure of Woven and Folded and Stitched Linings

AMERICAN IMPORTATION AND CONSUMPTION OF CRUDE RUBBER

During the last few months, according to data compiled by the Rubber Association, both importation and consumption of crude rubber by the industry have greatly increased, the figure for the October importation, at 37,157 long tons, being only twice surpassed during the last four years. For the ten months ended October last imports of crude rubber into the United States totaled 261,018 tons, and for the full year may reach 325,000 tons. Actual consumption in this country during this ten months' period was 276,135 tons, and for the full year will probably be 335,000 tons.

It is interesting to note that while importation has been greater than consumption during the years of 1921 and 1922, a change took place in 1923, when consumption by the American industry for the year totaled 305,694 tons, as compared with imports at 299,858 tons. The increase in consumption has been even more pronounced during the present year, for the total amount used, as mentioned above, reached 276,135 tons for the January-October period, as compared with importations of 261,018 tons. October figures for consumption are 33,374 tons, these figures being surpassed in recent years in two other instances only: those for March and May, 1923, at 36,629 tons and 36,155 tons, respectively.

At present writing London stocks are said to be down to about 32,000 tons, as compared with about 60,000 tons a year ago, while corresponding reductions have also been made in the world's remaining supplies.

AMERICAN EXPORTS OF RUBBER SOLES AND HEELS HAVE REACHED a value of $686,027 for the first ten months of the present year, as compared with $699,135, the total for the entire year 1922.

What the Rubber Chemists Are Doing

Factors Determining the Reinforcing Value of Fillers in Compounded Rubber[1]

By Herbert A. Endres[2]

THE practical bearing of the investigations recorded by the author of this paper are outlined in the following extracts.

The following factors determine the reinforcing effect which mineral compounding ingredients or fillers impart to vulcanized rubber: (1) particle size (specific surface); (2) degree of wetting (adhesive force); (3) particle shape.

Particle Size

The relation between the particle size of a filler and its reinforcing effect in vulcanized rubber has been conclusively shown by Wiegand.[3] All the fillers in use at the present time which are prepared by precipitation from solution are badly agglomerated and the smaller the particle size the worse the agglomeration. These fillers do not completely disperse in rubber on the mill, and compounds containing them show large agglomerated masses. These may be hard and behave like individual particles when compounds containing them are stretched, or they may be soft and break up very easily when a strain is applied to the rubber. The latter are very common and shown by iron oxide, antimony sulphides, light magnesium carbonate, poor grades of carbon black, etc. Aside from causing the loss of the true reinforcing effect of the filler, these agglomerates have a very deleterious effect on the physical properties of the vulcanizate, due to the comparative ease with which they are broken up. Any means of completely dispersing these fillers will greatly increase their reinforcing value. In general, it can be said that many of the badly agglomerated fillers, such as whiting and light magnesium carbonate, have a particle size in rubber many times greater than the individual particle size.

Data on individual particle size and particle size distribution are of value, however, as they show what can be expected in rubber if complete dispersion is obtained. When reinforcing effects do not correspond to ultimate particle size, agglomeration is the cause. It can be definitely stated that the reinforcing value of fillers that are not chemically reactive during the cure is determined by their particle size as dispersed in rubber, and variation in the specific surface of fillers is the predominating factor in their behavior in vulcanized compounded rubber.

Since substances that are in true solution in rubber have no reinforcing effect in the ordinary sense, it follows that the reinforcing effect-particle size curve must go through a maximum. There is, therefore, a limit to which decrease in particle size can be effectively carried for maximum reinforcing effect. In arriving at the particle size giving this maximum the chief difficulty is in obtaining a complete dispersion of the material in rubber.

Coarse fillers, such as barytes, whiting, aluminium flake, and asbestine, are classified as inerts and have very little reinforcing value. These are not readily wetted by rubber, as is shown by their tendency to carry air into the stocks and by the presence of gaseous films surrounding the particles.

Test of these considerations was made by preparing a filler, barium sulphate, in a very fine state of subdivision and properly dispersing it in rubber. The result showed that both from the standpoint of particle size and reinforcing action the finely precipitated barium sulphate holds a position between gas black and zinc oxide.

Lithopone has been wrongly classified as a coarse material of little reinforcing value. Although it is badly agglomerated as milled into rubber, its individual particle size averages between 0.3 and 0.4 μ, the zinc sulphide being considerably finer than the barium sulphate. These aggregates are not dispersed when incorporated into rubber on the mill, and when compounds containing lithopone are subjected to strain the zinc sulphide and barium sulphate in dry contact are easily separated. For these reasons lithopone as ordinarily incorporated does not show a reinforcing effect in accordance with its ultimate particle size. By properly dispersing lithopone in rubber its reinforcing effect was increased 53 per cent over an equal volume loading incorporated on the mill. The difference was caused by increased dispersion and wetting.

Degree of Wetting

A filler cannot be completely dispersed in rubber on the mill unless the rubber wets it, and the full reinforcing value of a filler cannot be realized unless it is completely dispersed. A decrease in particle size always causes a corresponding increase in reinforcing effect, and as long as the filler is in contact (wet) with the rubber the adhesive force between the rubber and the filler is determined entirely by the specific surface of the latter.

Some fillers mill into rubber very readily while others do not. The difference is due to adsorbed gases. It has been shown that the time factor is an important one in the wetting of some solids by some liquids, the air being slowly displaced. In some cases this air is so strongly adsorbed that it is present in considerable amount in the vulcanized compound. At the present time the two best reinforcing fillers produced commercially, gas black and zinc oxide, are prepared by sublimation or fuming processes. In these processes the individual particles of the material become coated with film of adsorbed gases and are thus prevented from coming within their spheres of adhesion. Agglomeration is therefore avoided and these fillers, when properly prepared, can be completely dispersed in rubber on the mill. During the milling and vulcanization processes the adsorbed gases are dissolved in and displaced by the rubber and the latter then comes into intimate contact with the filler particles. Zinc oxide and gas black also possess other properties, which cause them to completely disperse in rubber on the mill and impart superior physical properties to compounded rubber.

Particle Shapes

The reinforcing action of anisotropic fillers such as clay and light magnesium carbonate is much greater than would be expected from a consideration of their particle size as dispersed in rubber on the mill. This is not due to a superior adhesion between rubber and filler but is caused by the alinement of the filler particles in such a way that there is less rubber phase between the particles in the direction of the calender grain. To effect a given elongation this lesser amount of rubber will have to be elongated to a greater proportion of its ultimate elongation, which means that a higher stress must be imposed.

The increased stiffness and ultimate tensile of the china clay dispersed by special process over that dispersed on the mill are due to more complete wetting and better dispersion. In this connection it is of interest to note that colloidal clay, when milled in, gives no better stiffening or tensile than china clay treated in the same way.

---

[1] Presented before the Division of Rubber Chemistry at the 67th Meeting of the American Chemical Society, Washington, D. C., April 21 to 26, 1924. Published in *Industrial and Engineering Chemistry*, November, 1148-1152 (1924).

[2] The Goodyear Tire & Rubber Co., Akron, Ohio.

[3] *Canadian Chemical Journal* 4,160 (1920).

The grain effect in compounded rubber has been shown to be of dual origin—that due to the rubber phase and that caused by the pigment phase. Vogt and Evans have assumed that in the normal milling or calendering operations the particles of an anisotropic filler aline themselves with their least dimension perpendicular to the plane of the calender and to the grain. The stiffness caused by anisotropic fillers has been explained on the basis of this assumption and proved microscopically.

Chemical Patents

The United States

AGE RESISTING RUBBER COMPOSITION AND PROCESS. The method of producing a rubber composition which comprises adding to a rubber compound of established vulcanizing characteristics an aldehyde-amine reaction product which is substantially a non-accelerator of vulcanization in the compound.—Herbert A. Winkelmann and Harold Gray, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,515,642.

The Dominion of Canada

COATING COMPOSITION. A coating composition comprising chlorinated vulcanized rubber 100 parts, a pigment in the proportion of 5-250 parts, and benzol in the proportion of 3 to 5 times the weight of the solids.—The Canadian Consolidated Rubber Co., Limited, Montreal, assignee of Charles E. Bradley, Mishawaka, Indiana, and Willis A. Gibbons, Little Neck, N. Y. Canadian patent No. 244,577.

RUBBER VULCANIZATION. The method of improving the vulcanization of rubber mixtures containing sulphur and zinc oxide, which comprises adding to the mixture a small amount of a zinc salt or derivative capable of promoting dissolution of the zinc oxide in the rubber, together with a small amount of an organic accelerator, and vulcanizing the mixture. Twenty-seven claims allowed.—The Norwalk Tire & Rubber Co., assignee of William F. Russell, both of Norwalk, Connecticut. Canadian patent No. 244,612.

PROCESS FOR COMPOUNDING AND VULCANIZING RUBBER. A process which comprises dipping rubber in a solution containing zinc in combination, an amine, sulphur, and a material comprising carbon disulphide, allowing the substances mentioned to diffuse themselves throughout the rubber, and vulcanizing the rubber at a temperature below the normal hot vulcanization temperature. Twenty-six claims allowed.—The Canadian Consolidated Rubber Co., Limited, Montreal, assignee of Sidney M. Cadwell, Leonia, New Jersey, and Omar H. Smith, New York, N. Y. Canadian patent No. 245,151.

VULCANIZATION OF RUBBER. A process for controlling the vulcanization of rubber which comprises causing a vulcanizing ingredient contained in the rubber to react with a substance for checking the vulcanizing action on the rubber of the ingredient without removing the ingredient from the rubber, treating the rubber with a substance similar to the vulcanizing ingredient reacted upon, and vulcanizing the rubber. One hundred and one claims allowed.—The Canadian Consolidated Rubber Co., Limited, Montreal, assignee of Sidney M. Cadwell, Leonia, New Jersey. Canadian patent No. 245,152.

The United Kingdom

PUNCTURE SEALING COMPOSITION. The liquid vehicle of a puncture-sealing composition consists of a solution of a deliquescent salt, preferably calcium chloride. A suitable composition is 40 parts of calcium chloride in 60 parts of water, 100 grams of rubber scrapings and 200 grams of carbonate of lime. The solution may be thickened by the addition of gums, etc.—P. J. F. Souviron, 18 Rue de Massey, Tarbes, Hautes Pyrenees, France. British patent No. 221,496.

GOLF BALLS. A golf ball is made in one piece by molding a spherical core of rubber mixing consisting of ribbed smoked sheets, zinc oxide, and sulphur, together with 5 per cent ammonium carbonate or other gas evolving ingredient, the core being covered by a vulcanite mixing containing a small proportion of linseed oil and an accelerator, the whole being then vulcanized.—G. W. T. Leeson, 24 Walbrook, London, England. British patent No. 221,708.

PRESERVING INDIA RUBBER. A preservative for india rubber comprises a substance having a negative catalytic effect on the oxidation of the sulphur. Suitable substances are mixtures of glycerine with benzaldehyde, and solutions of phenylhydrazine and glucose. They may be mixed with unvulcanized rubber solution for rubbing into fissures in the rubber. For example, a mixture of 1,300 grams of talcum, 172 grams of glycerine, and 34 grams of benzaldehyde is introduced into a solution of 60 grams of raw rubber in 600 grams of paraffin oil at 140 degrees C., and the temperature is raised to 180 degrees C. for 2 hours.—Robel & Fiedler Ges., 98 Seeburgstrasse, Leipzig, Germany. British patent No. 221,788.

VULCANIZING INDIA RUBBER. Rubber articles are vulcanized under direct gas pressure by suspending them in a heated chamber capable of being sealed, the heat being conveyed to them by sulphuretted hydrogen gas under pressure.—H. H. Duke, Moseley, Banksia Avenue, Rockdale, Sidney, Australia. British patent No. 221,592.

UTILIZING RUBBER WASTE. Waste vulcanized rubber is ground to a fine crumb, mixed with litharge and sulphur and optionally with an accelerator, and heated in a mold to a temperature exceeding 300 degrees F. while a pressure of 1 to 1½ tons per square inch is applied. To 100 parts of the rubber may be added 5 parts of litharge, 10 parts of sulphur, and one half part of accelerator.—W. Wild, Farrington School House, Lostock Hall, Lancashire. British patent No. 222,016.

ACCELERATOR OF VULCANIZATION. A vulcanizing accelerator consists of the reaction product of an aldehyde and thiourea. The product may be prepared by adding aldehyde ammonia to an aqueous solution of thiourea. To this solution is added acetaldehyde in liquid or gaseous form, and the reaction product is crystallized out. Other aldehydes, such as benzaldehyde, formaldehyde, and furfuraldehyde, may replace acetaldehyde, and acid catalysts may be used.—H. O. Chute, 52 East Forty-first street, New York, N. Y. British patent No. 222,103.

TREATING RUBBER LATEX. Pure rubber sheets are deposited from purified latex by electrophoretic precipitation upon an anode.—Anode Rubber Co., assignees of P. Klein, 78 V. Vilmos Csaszar ut. Budapest. British patents 223,188 and 223,189.

CARBON BLACK PRODUCTION—1923

It has been estimated that approximately 30 per cent of the annual carbon black output is consumed by the rubber industry. According to the Department of the Interior through the Geological Survey, the carbon black produced in 1923 in the United States amounted to 138,262,648 pounds, an increase of 104 per cent over the production in 1922. This increase in output in 1923 was a result of the expansion of the industry that followed the growing demand for carbon black by rubber companies in 1922. The number of producers of carbon black reporting to the Survey rose from 26 in 1922 to 47 in 1923, and the number of plants operated rose from 43 to 69. With the resulting over-production late in 1923 the stocks increased from 2,434,547 pounds on January 1, 1923, to 38,320,814 pounds on December 31.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" should be in the library of every progressive rubber man.

Annual Dinner of the Rubber Trade Association

WHEN the crude rubber men of New York gather together each year at the annual dinner of the Rubber Trade Association all business personalities are submerged in the overflow of good fellowship that invariably predominates at these yearly meetings of the men that represent the crude rubber trade.

There were 200 members and guests who attended the annual banquet of the Rubber Trade Association of New York, Inc., that was held on the evening of December 11, 1924, at the Biltmore Hotel, New York, N. Y. The Music Room, where the dinner was held, and the adjoining foyer, were appropriately draped with flags and banners, while the tables in the dining hall were decorated profusely with bright flowers.

Members and guests mingled freely in the spacious lobbies, exchanging courtesies and renewing old acquaintances, until the bugle sounded "mess" call. An inspiring march was played by the orchestra as the diners entered the dining hall and took their allotted places at the tables. The menu was carefully chosen and fairly surpassed the usual excellence of these banquets. During the dinner there was music by the orchestra and a quartette of singers that greatly added to the enjoyment of the occasion.

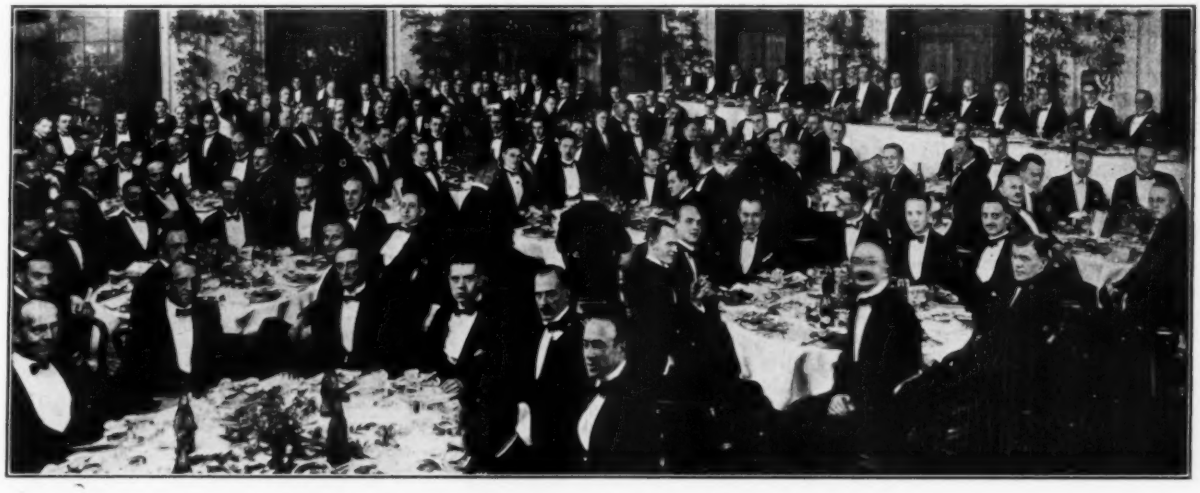
H. A. Astlett, President Rubber Trade Association

Dutch Reformed Church, East Orange, New Jersey, was introduced few of his listeners realized they were to hear the finest address ever delivered to a rubber audience. A humorist of the highest order, Dr. Giles' pointed wit left no sting, his shrewd epigrams inspired serious thought, and he led his hearers with sublime art to a better understanding of American liberty as guaranteed by the Constitution of the United States. It was a practical sermon that will long be remembered by those who heard it.

The Honorable Henry F. Ashurst, United States senator from Arizona, who was the next speaker, warmly eulogized the preceding address of Dr. Giles. This gifted orator adroitly changed the subject of his speech in support of the principles of liberty. He closed his address with a word picture of his native state and the prominent part Arizona is taking in the agricultural, commercial and industrial development of the United States.

Thus closed one of the most interesting and enjoyable dinners ever given by the Rubber Trade Association of New York.

Prominent guests at the speakers' table were: G. R. Crowther, propaganda secretary, Rubber Growers Association, London, England; and A. L. Viles, general manager, The Rubber Association of America.



Annual Banquet of the Rubber Trade Association of New York, Inc.

In the absence of H. A. Astlett, the newly elected president of the association, Charles T. Wilson, the past-president presided. When the cigars were passed around he called the meeting to order and briefly reviewed the progress made by the association during the past year. He closed his remarks with appreciative thanks to the members and executives of the association for their hearty support and cooperation.

The first speaker to be introduced was W. O. Rutherford, president of The Rubber Association of America who spoke of the progress being made toward greater economy in the rubber industry through association activities. The industry, he said, was facing a year of potential prosperity that bespoke greater developments in factory management and manufacturing processes toward greater economy in the production of rubber goods.

When the next speaker, Dr. Warren Y. Giles, pastor of the First

HOW FAR WILL A TOY BALLOON TRAVEL?

A toy balloon set free in Schenectady, New York, in connection with a Fourth of July celebration, was found on the outskirts of Worcester, Massachusetts; another was found at Kingston, New York; another at Dorset, Vermont, and still another at Winchendon, Massachusetts.

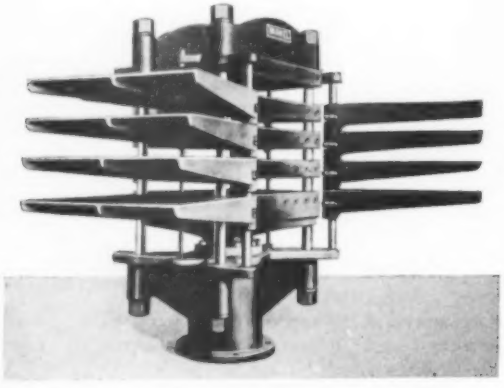
AMERICAN EXPORTS OF CANVAS RUBBER-SOLED SHOES HAVE already reached a value for the first ten months of 1924 of $2,374,842, as compared with a total of $2,358,463 for the entire year 1922. The largest shipment of the present year occurred in July, when 401,897 pairs, value $320,985, were exported.

New Machines and Appliances

Five Platen Heel Press

THE hydraulic vulcanizing press here illustrated is a standard 5-platen press with cast-iron steam heated platens especially designed for curing rubber heels. The special features are the two sets of swinging tables.

In operation, one set of tables is loaded with molds containing uncured heels. When the cure is completed the filled tables are



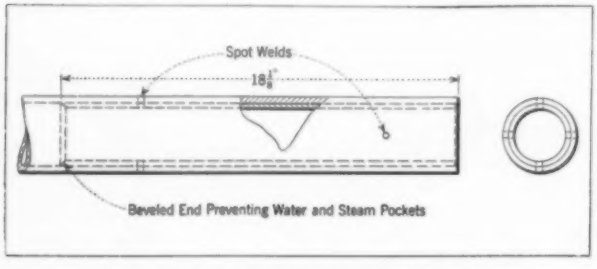
Farrel Hydraulic Heel Press

swung against one side of the press platens, the empty shelves being swung against the opposite side of the press. When the press is opened the molds with uncured heels are pushed into the press, forcing out the cured molds onto the shelves on the opposite side, and the press is then ready to be closed again. —Farrel Foundry & Machine Co., Ansonia, Connecticut.

Reinforced Mandrels

The necessity of reinforcing the ends of hollow mandrels to better enable them to withstand damage by the operations of chucking, spreader knocks, stripping clamps, etc., has been met by a special process of shrinking, welding, tapering and sealing all joints of an inserted sleeve.

The operations incidental to this new process of mandrel con-



Reinforced Ends of Inner Tube Mandrels

struction include heating the end of the mandrel, inserting the reinforcement under heavy pressure to insure a joint absolutely proof against the entrance of moisture. Then to provide against any possibility of loosening the sleeve, it is spot welded in several places. The ends are then properly rounded and the mandrel is ground to a uniform diameter its entire length.

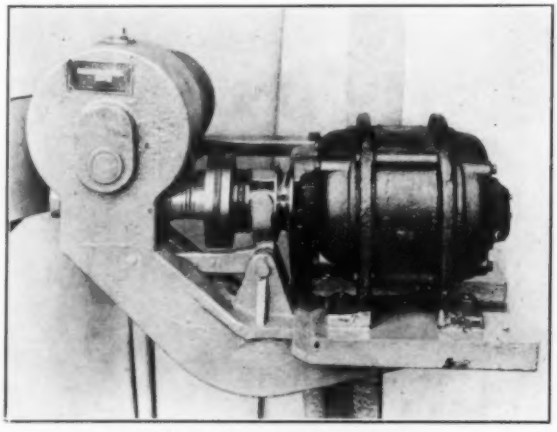
Sherardized reinforced mandrels thus constructed withstand the test of service and are accepted as standard equipment for making inner tubes and rubber hose.—The New Haven Sherardizing Co., Hartford, Connecticut.

Individual Motor Drive Unit

The motor drive here illustrated is made up complete and ready to slip on the drive shaft of any machine, to replace the usual tight and loose pulleys or clutch.

It is supplied in horsepower capacities ranging from ¼ to 3 horsepower and to meet any speed requirements on the driven shaft from 10 up to 3,600 r.p.m., from motors ranging from 750 to 1,800 r.p.m. A friction disk clutch equipment can be furnished as here pictured, or flexible coupling for continuous drive. For disconnecting on continuous drive machines, an expanding clutch is supplied. Worm or spiral gearing is used, according to speed requirements.

The great advantage of this drive is the fact that it is shipped completely assembled and therefore can be readily applied to the drive shaft of any type machine. The bracket is in one piece



Utility "Motor-It" Drive Unit

and when placed on the machine shaft is lined ready for service. —Utility Manufacturing Co., Cudahy, Wisconsin.

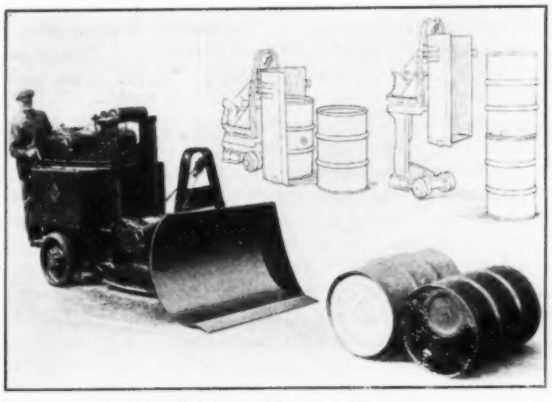
Electric Elevator Stacking Tractor

An electric elevator tractor for transporting and stacking bulky cylindrical and rectangular loads is here pictured. It handles rolls of fabric, rubber stock, barrels, bales and boxes, automatically picking up the load in any position and stacking it either vertically or horizontally as desired. As the elevator raises the lower end of the load 6 feet, material 6 feet high can be stacked, end on end, to 12-foot heights with practically no additional attention. This saves storage space, eliminates the double handling by block and tackle method, saves time and labor, and avoids the usual hazards incident to hand handling.

The unit consists of an elevator tractor with a revolving cradle for securing the load at the end of the platform, the cradle being built to suit. The load is raised or lowered by operating

the elevating platform, while the cradle is revolved to any position from the horizontal to the vertical by means of the additional hoisting unit.

All power for the equipment is supplied from one central storage battery carried in the battery compartment, with individual



Elwell-Parker Elevator Tractor

comtrollers for the lifting, revolving, and driving mechanism.

The standard safety devices are installed along with some additional ones covering the new operation, as, with the slacking of the elevating cable while lowering load due to striking an obstruction, elevating motor instantly stops. One man operates the equipment and has clear vision of the forward part of the unit at all times.—The Elwell-Parker Electric Co., Cleveland, Ohio.

Seamless Steam Jacketed Mixers

Wherever liquid material needs to be heated and agitated in manufacturing processes, as sometimes occurs in the rubber industry, a seamless jacketed kettle of the type here represented is well adapted to the purpose because it is cast seamless in a

Dopp "D" Double Motion Agitator

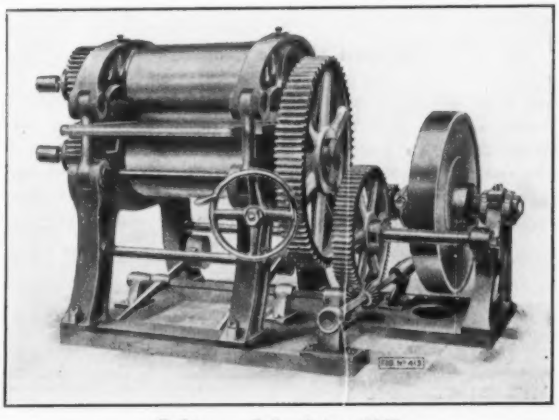
single piece. This is particularly important in cases where oil jacketed heaters are required to maintain high heats, as shown in the illustration. This represents a 100-gallon, style D double-motion bracket type agitator connected with an oil heating system. The unit is used for preparing adhesive compound for friction tape and has displaced three single shell direct fire kettles of the same size. Various double motion agitators are applied to secure uniform and constant mixing during processing.—Sowers Manufacturing Co., Buffalo, N. Y.

Shoe Sole Crêpe Machine

The success of plantation crêpe soling lends interest to the sole crêpe machine here illustrated. For the finishing stage of the manufacture of shoe sole crêpe rubber a machine with rolls vertically disposed has been found preferable to either the horizontal or angle type mills used for the preparation of ordinary crêpe rubber. Further, special features have been found essential.

The machine illustrated has rolls 12 inches in diameter and any width up to 26 inches and is arranged for a single pulley and friction clutch drive preferably actuated by a foot treadle extending along the front of the machine, giving full and instant control and also serving as an efficient stopping device.

A special feature is found in the patented system of levers which carry the top roller. They are actuated from a camshaft which raises or lowers the roll to the required position, thus affording a quick simultaneous adjustment by means of a worm wheel operated by the hand wheel in front of the machine. The



Robinson Sole Crêpe Mill

rolls are hollow for water cooling and run in self-oiling bearings.

At the front of the machine is fitted a strong wood work-table level with the nip, which facilitates feeding the various plies of crêpe evenly between the rolls. An adjustable steel doctor is fitted to the bottom roll at the rear to prevent the laminated crêpe adhering to the surface.—Joseph Robinson & Co., Limited, Salford, Manchester, England.

FUSING PROCESS FOR TIRE RETREADING AND REPAIRING

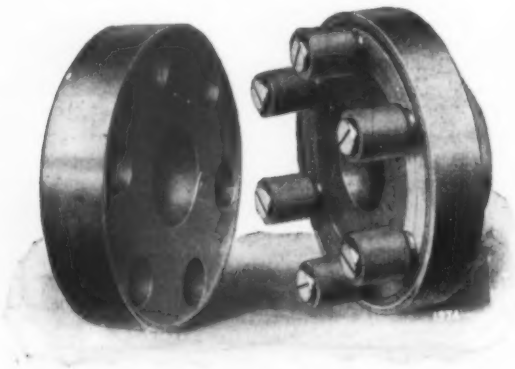
In retreading a tire by this process, the first step is the examination of the carcass for weakness. If sound, it is given a brush coat of the devulcanizing compound. This is then driven into the tire by heat. The tread for a depth of about one-eighth of an inch becomes devulcanized and the rubber becomes soft and tacky.

The fusing compound is next applied for the purpose of putting the old tread rubber in proper condition for recuring. New uncured tread rubber is then applied and the tire clamped in the mold and placed in the curing cabinet where the fusion or welding of the old and new rubber is completed.—Nestler Rubber Fusing Co., Incorporated, 245 West Fifty-fifth street, New York, N. Y.

Flexible Rubber Shaft Coupling

The purpose of a flexible coupling is to make allowance for a certain amount of misalinement and to permit axial motion between two directly connected shafts. It is practically impossible to aline properly more than two bearings on a single shaft and it is also impractical to fasten the shafts of two machines rigidly connected together, as there must usually be provision for axial motion.

The De Laval flexible coupling, the construction of which is shown in the illustration, is suited to all services except those involving high speeds. The flexible medium employed is rubber in the form of metal lined bushings fitted to the ends of the bolts in the driven flange of the coupling. The rubber not only serves to take care of the misalinement, but also to deaden shocks generated by the driving or driven machines. They also act as insulators, which is sometimes desirable in electrical work. They are



De Laval Flexible Coupling

the only parts of the coupling that become worn or damaged by abuse or excessive misalinement and can be quickly and cheaply replaced. These couplings are particularly adapted for low speed rubber machines, and can be obtained in various standard sizes.—The Turbine Equipment Co., 30 Church street, New York, N. Y.

Machinery Patents

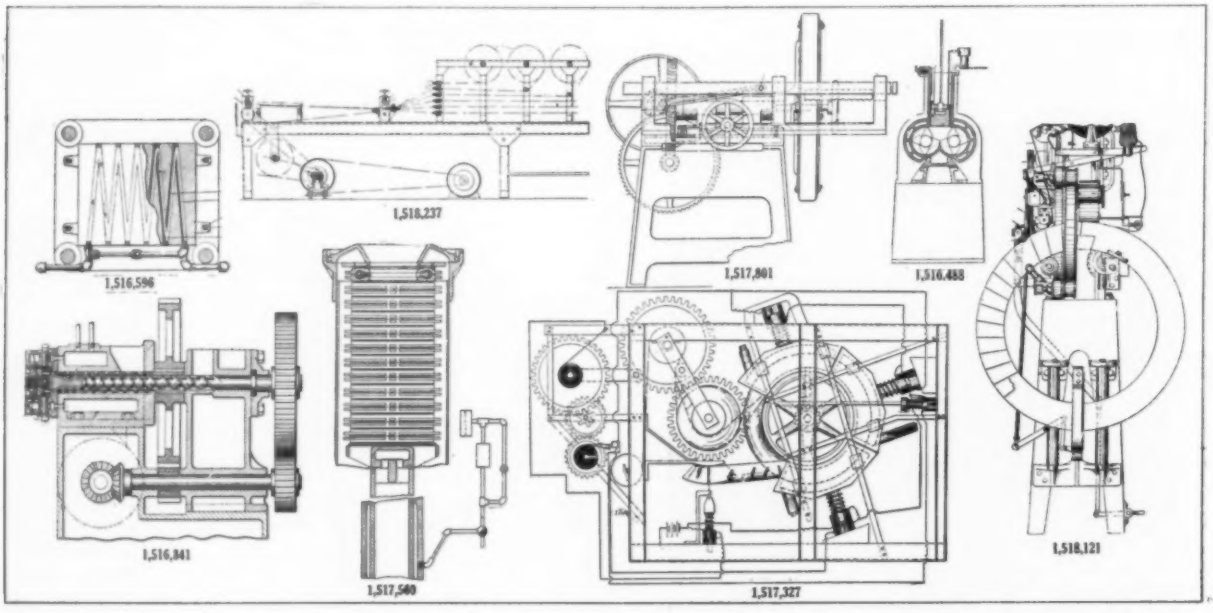
The United States

(1,516,488). MACHINE FOR TREATING RUBBER. To the vertically moving device and to close the stock inlet of an enclosed rubber mixing is applied a vertical rod carrying a pencil which records a line on a chart wrapped around a revolving cylinder or drum. By this means the movement of the vertical closure may be recorded.—Fernby H. Banbury, Ansonia, assignor to Birmingham Iron Foundry, Derby, both in Connecticut. United States patent No. 1,156,488.

(1,516,596). HOT PLATE FOR VULCANIZING PRESSES. For the purpose of circulating steam for heating press plates a series of diagonal holes or ducts are drilled clear through the plates. These holes meet or run into each other in staggered fashion at apexes in two series of common holes on the respective front and rear edges of the plates. All the apex holes are tapped and screw plugged, this resulting in a continuous zig-zag fluid passage.—John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Rubber Co., New York, N. Y. United States patent No. 1,516,596.

(1,516,841). MACHINE FOR MAKING ARTICLES OF PLASTIC COMPOUNDS OF DIFFERENT COLORS. Incomplete mixing or streaking together of two colored stocks is secured in a tubing machine by propelling each stock independently fed through the machine by means of separate screws, one operating within the other. The colors emerge from the propelling screws and streak together as they emerge from the die of the machine.—A. C. Buttfield, Butler, New Jersey, assignor to American Hard Rubber Co., New York, N. Y. United States patent No. 1,516,841.

(1,517,327). APPARATUS FOR VULCANIZATION. A machine for forming and vulcanizing in continuous length concave bands as tire reliners. The stock is carried over and under a series of shaping drums to form a reversed-curvature semi-formed reliner. It is then reversed and carried onto an annular platen for final forming and curing by segmental platens electrically heated.—E. C. Wiese, Milwaukee, Wisconsin, assignor by mesne assignments, to the Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,517,327.



(1,517,560). VULCANIZING APPARATUS. The apparatus indicated is particularly adapted to control the application of heat to articles during vulcanization, such as tires in molds. The heater

is constructed to interrupt communication between the space within the periphery of the molds and the space outside the molds and at the same time to afford free communication between the inner space and the exterior of the heater.—Daniel E. Hennessy, Milwaukee, Wisconsin, assignor by mesne assignments, to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,517,560.

(1,517,801). APPARATUS FOR CUTTING TIRES. A machine for cutting solid tire rubber from steel rims. It comprises a rotatable arbor and chuck for holding the tire and a reciprocating knife adjustably operating to sever the rubber from the rim as it rotates upward toward the blade.—H. Reichel, Chicago, Illinois. United States patent No. 1,517,801.

(1,518,121). GLUING DEVICE FOR TIRE-WRAPPING MACHINES. A mechanism is provided for applying adhesive by a fixed brush to the inside of the spiral wrapping paper before the latter is applied to the tire.—John H. Roberts, Milwaukee, Wisconsin, assignor, by mesne assignments, to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,518,121.

(1,518,237). FLAP-MAKING MACHINE. A mechanism for drawing strips from supply rolls and assembling them superimposed, preferably, but not necessarily, with the edges of one of the strips folded about the others. The laminated fabric band is finally continuously wound up on a removable reel upon which the banded strips are vulcanized. After vulcanization the strips are readily removed for subsequent treatment.—Adrian O. Abbott, Jr., Detroit, assignor to Morgan & Wright, both of Michigan. United States patent No. 1,518,237.

Other Machinery Patents

The United States

1,515,627 Apparatus for gaging annular articles. F. J. Shook, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,516,072 Apparatus for forming rings or beads on the necks of toy balloons. Nelt Barr, Lorain, Ohio, assignor to The Barr Rubber Products Co., Lorain, Ohio.

1,516,290 Cord band building machine. F. H. Grove, Columbiana, Ohio.

1,516,613 Method and machine for making laminated articles. F. J. MacDonald, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,516,620 Hose-making apparatus. J. C. Rankin, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,516,842 Machine for making articles of plastic compounds of different colors. A. C. Buttfield, Butler, New Jersey, assignor to American Hard Rubber Co., New York, N. Y.

1,516,843 Machine for making articles of plastic compounds of different colors. A. C. Buttfield, Butler, New Jersey, assignor to American Hard Rubber Co., New York, N. Y.

1,517,278 Casing support and bead spreading apparatus. F. M. Case, assignor to E. Ramsdell, both in Cleveland, Ohio.

1,517,517 Repair vulcanizer. E. W. Melvin, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,517,850 Tire mold. G. L. Mather, Milwaukee, Wisconsin, assignor by mesne assignments to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,518,129 Apparatus for treating rubber and other plastic material. F. H. Banbury, Ansonia, Connecticut, assignor to Birmingham Iron Foundry, Derby, Connecticut.

1,518,238 Process and apparatus for emptying vulcanizing bags. A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Michigan.

The Dominion of Canada

244,553 Tire forming machine. W. E. Swern, Kokomo, Indiana, U. S. A.

244,599 Machine for making laminated articles. The B. F. Goodrich Co., New York, N. Y., assignee of F. J. MacDonald, Ellet, Ohio, both in U. S. A.

244,796 Method and apparatus for making endless tire bands. The B. F. Goodrich Co., New York, N. Y., assignee of J. R. Gammeter, Akron, Ohio, both in U. S. A.

244,938 Shoe trimming machine. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, Canada, assignee of E. L. Patten, New Haven, Connecticut, U. S. A.

The United Kingdom

221,524 Apparatus for grinding, mixing, washing, etc., rubber and the like. J. Robinson & Co., Ltd., Springfield Lane Iron Works, Greengate, Salford, Manchester; F. Garner, Croft House, New Smithy, Chapel-en-le-Frith, Derbyshire; and A. Hall, 17 Kensington Road, Ansdell, Lancashire.

221,613 Wind-up attachment for fabric cutting machine. A. Carpmael, 24 Southampton Buildings, London.

222,902 Portable repair vulcanizer. J. W. Naylor, 31 Marshall street, West Smethwick, Birmingham.

223,195 Tire making machine. Société Anonyme des Pneumatiques Dunlop, 64 Rue de Lisbonne, Paris.

Germany

Patents Issued With Dates of Issue

405,539 (July 1, 1920). Device for making hollow ring-shaped rubber objects. Paramount Rubber Consolidated, Inc.; Philadelphia, Pennsylvania, United States; represented by: Dr. B. Bloch, Berlin N. W. 21.

405,540 (May 6, 1922). Spreading machine for rubber and similar plastic masses. Rückgewinnung vergasender Löseflüssigkeiten G. m. b. H., Berlin.

405,541 (December 29, 1921). Electrically heated vulcanizing apparatus. Harvey Frost & Co., Limited, London; represented by: H. Licht, Berlin S. W. 11.

405,802 (August 23, 1921). Mandrel for making rubber hose. Karl Kort, Gretchenstrasse 33, Hannover.

Design Patents Issued With Dates of Issue

885,297 (September 8, 1924). Locking device particularly for impregnating and vulcanizing kettles (steam kettles). Machinenbau A.-G. Balcke Abt. Mcll, Neubeckum i. W.

886,077 (September 18, 1924). Machine for rolling out and cutting chewing gum or similar substances. Paul Franke & Co., A.-G., Leipzig-Böhlitz-Ehrenberg.

886,450 (September 8, 1924). Device for attaching exchangeable rubber heels. Ferdinand Habenicht, Windmühlenweg 3, Leipzig.

887,631 (September 3, 1924). Heating plate press for vulcanizing rubber balls. G. Siempelkamp & Co., Krefeld.

Other Process Patents

The United States

15,957 (Reissue) Process of producing cellular rubber. K. H. Fulton, Pittsburgh, Pennsylvania, assignor to M. J. Summerfield, Richmond, Virginia.

1,516,598 Method of printing sheet rubber. R. T. Griffiths, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,516,629 Method of vulcanizing rubber composition. E. Blaker, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,517,023 Method of preparing baseball with vulcanized rubber shell. T. S. Shibe, Philadelphia, Pennsylvania.

1,517,221 Process of reclaiming rubber materials, and the product. G. J. Mead, Chicago, Illinois, and C. A. Rossbach, Milwaukee, Wisconsin, assignors to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,517,606 Coating fabric with rubber. E. C. Weise, Milwaukee, Wisconsin, assignor by mesne assignments to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,517,863 Method of making a core pad. C. A. Rossbach, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,517,892 Leather substitute containing rubber and method of making. K. R. Douglass, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Delaware.

1,518,062 Method of making rubber shoe. W. E. Glancy, Waltham, assignor to Hood Rubber Co., Watertown, both in Massachusetts.

1,518,521 Method of forming washers. H. P. Kraft, Ridgewood, New Jersey; E. J. Phillips and E. A. Darr, executors of said H. P. Kraft, deceased.

1,518,584 Method of sewing sleeves into garments, employing rubber thread. F. Kasralowicz, Poughkeepsie, New York.

The Dominion of Canada

244,452 Manufacture of tape, cord, etc. E. P. Limited, Jersey, Channel Islands, assignee of G. A. Andrew, Northwood, Middlesex, England.

244,593 Manufacture of rubber window glass channels. The Dryden Rubber Co., assignee of R. Beynon, both of Chicago, Illinois.

245,009 Manufacture of tire beads. J. R. Gammeter, Akron, Ohio, assignee of F. H. Beyea, Union Springs, New York, both in U. S. A.

Germany

Patents Issued With Dates of Issue

404,838 (October 6, 1923). Method of making tire covers. Max Müller Maschinen-und Farmenfabrik, Hannover-Hainholz.

404,898 (November 17, 1922). Method of putting treads on carcasses. The Norwalk Tire and Rubber Co., Norwalk, Connecticut, United States; represented by G. Benjamin and H. F. Wertheimer, Berlin S. W. 11.

406,274 (October 2, 1921). Method and device for making rubber tubes. Karl Kort, Gretchenstrasse, Hannover.

Activities of the Rubber Association of America

THE tenth annual meeting of The Rubber Association of America will be held at 10:30 A. M., January 5, 1925, in the West Ball Room of the Hotel Commodore, Lexington avenue and 42nd street, New York, N. Y.

Each firm member is entitled to a vote at the annual meeting, to be cast by the registered firm representative only, unless his power is delegated to someone in the employ of or acting for the firm member and holding a written proxy.

Affiliated members may not vote for the election of directors, nor upon questions which relate solely to the rubber industry itself. On all other matters each affiliated member is entitled to a vote, to be cast by its registered firm representative only, unless his power is delegated to some one in the employ of or acting for the affiliated member and holding a written proxy.

In the event of the inability of any firm representative to attend the meeting, the use of a signed proxy is an important matter because at the annual meeting balloting for the election of directors will be necessary, ten firm representatives having been nominated by the Committee on Nominations to fill five vacancies in the board. It is requested that members bear this in mind and make certain to use the proxy, if necessary, delegating authority to the general manager of the association or to some other representative to vote for them if they are unable to attend.

The regular order of business will be taken up at 10:30 A. M., and a luncheon is to be served at 1:00 P. M. to all in attendance, without charge. At the conclusion of the luncheon informal addresses are to be made by several executives in the industry upon subjects of general interest.

Annual Dinner

The twenty-fifth annual dinner will be held January 5, 1925, at 7 P. M., in the Grand Ball Room of the Hotel Commodore, Lexington avenue and 42nd street, New York, N. Y., instead of the Waldorf-Astoria as in previous years.

Members and friends are cordially invited. As at previous dinners, each table will accommodate ten persons. Those desiring to reserve an entire table or to be seated with certain individuals should promptly notify the secretary of the association. Tickets are $10.

Annual Meetings of Divisions and Committees

TUESDAY, JANUARY 6, 1925

	Yale Club	Time
Mechanical Goods Division	Room 2, 18th floor	9:30 a. m.
Foreign Trade Division	Room 4, 18th floor	10:00 a. m.
Hard Rubber Division	Room 1, 18th floor	10:00 a. m.
Accounting Committee	Room 2, 4th floor	10:00 a. m.
Auto Fabric Manufacturers Division	Room 3, 18th floor	10:30 a. m.
Reclaimers Division	Room 1, 4th floor	11:00 a. m.
Proofers Division	Room 7, 18th floor	1:00 p. m.

WEDNESDAY, JANUARY 7, 1925

	Yale Club	Time
Footwear Division	Room 1, 18th floor	9:30 a. m.
Cycle Tire Committee	Room 4, 18th floor	10:00 a. m.
Sundries Division	Room 2, 18th floor	1:00 p. m.
Tire Manufacturers Division	Room 3, 18th floor	1:00 p. m.

THURSDAY, JANUARY 8, 1925

	Yale Club	Time
Service Managers Committee	Room 2, 18th floor	10:00 a. m.

October Production, Inventory and Shipments of Tires

October production of cord, fabric and balloon casings combined reached the figure of 3,877,076, the highest monthly output of the year and representing the third consecutive month in which production has been steadily advancing. The corresponding October shipments are estimated at 3,146,761 tires, about 250,000 less than in September and about a million under the August deliveries. The last-mentioned fact accounts for inventories having risen from the year's low point of 4,477,016, established in August, to 5,338,380 at the end of October. Inventories all show declines, however, as compared with October, 1923. For the fourth consecutive month also there is an evident increase in the amount of crude rubber used in the manufacture of casings, tubes, and solid and cushion tires, the total for October being 46,045,252 pounds, as compared with 43,920,689 pounds, the figure for September, and previously the highest record for the year.

Shipments of balloon casings advanced sharply in October to 454,117, as compared with 398,324 for the previous month, the October figure being also the highest for the year. Inventory, however, has been correspondingly growing, while the October production is estimated at 485,371 casings. Estimates based on October figures show 1.9 months' supply of balloon casings on hand, and 2.2 months' supply of balloon inner tubes. Shipments of the latter class of goods have also reached, at 402,103, the highest figure of the year.

Combined shipments during October of high pressure cord and fabric tires totaled 2,692,644 as compared with 3,005,915 for the month previous, and 2,865,907 in October, 1923. The corresponding October production of these casings amounted to 3,391,705 against 3,051,123 in September and 2,361,340 in October of last year. Shipments during October of high pressure inner tubes totaled 3,872,813, compared with 4,823,039 in September, and 3,635,856 in October, 1923, while October production stood at 5,466,553 as against 5,039,594 in September, and 3,855,244 in October, 1923. There were 48,109 solid and 10,829 cushion tires produced in October, shipments of these goods during that month totaling 47,707 and 10,371 respectively. The consumption by the American industry of crude rubber for casings, tubes and solid and cushion tires has reached a total during the first ten months of 1924 of 375,077,032 pounds.

INVENTORY—PRODUCTION—DOMESTIC AND FOREIGN SHIPMENTS OF PNEUMATIC CASINGS—INNER TUBES—SOLID TIRES

	Pneumatic Casings				Inner Tubes				Solid and Cushion Tires			
	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
Twelve months, 1922	..	58,401,086	30,698,139	29,221,899	..	72,463,938	38,137,181	36,656,435	..	2,320,650	786,603	688,845
Twelve months, 1923	..	67,448,419	33,933,936	32,991,810	..	87,807,770	45,128,083	43,554,963	..	3,013,674	692,148	690,090
1924												
January	56	4,808,084	3,220,292	2,838,570	51	6,720,247	3,887,959	3,542,500	10	182,782	53,604	47,295
February	55	5,265,133	3,278,674	2,866,626	50	7,339,307	4,067,631	3,397,668	10	188,519	60,646	52,965
March	57	5,763,084	3,427,692	2,990,872	53	8,157,704	4,218,950	3,500,105	10	203,608	68,662	61,482
April	60	6,164,226	3,307,478	3,013,441	54	8,627,343	4,035,242	3,586,279	10	212,419	69,534	58,486
May	58	6,331,193	3,038,586	2,769,970	53	8,761,812	3,744,108	3,648,490	10	219,538	63,901	60,267
June	55	6,155,537	2,629,742	2,753,143	51	8,166,158	3,493,431	3,964,609	10	212,704	50,887	58,716
July	52	5,138,474	2,552,329	3,561,110	49	6,634,022	3,857,289	5,392,253	10	202,850	42,498	51,449
August	52	4,477,016	3,234,741	4,193,114	48	5,758,310	5,015,687	5,619,914	9	183,159	52,516	60,684
September	56	4,524,405	3,530,878	3,404,239	51	6,038,868	5,506,442	5,180,804	10	179,927	54,106	59,581
October	56	5,338,380	3,877,076	3,146,761	54	7,352,200	5,895,797	4,274,916	10	182,400	58,938	58,078

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and, as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" prior to January, 1924, includes only stock forwarded to a purchaser and not stock forwarded to warehouse, branch, on consignment basis, or abroad. After January, 1924, shipments abroad are included in these figures.

New Goods and Specialties

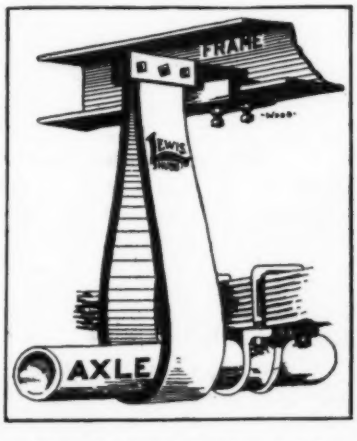
A Temporary High Chair

An attachment which makes of any ordinary chair a high chair in which even very tiny babies may be held comfortably and securely has a steel frame with rubber covered hooks extending over the chair back. A rubber covered buffer holds it out and protects the front of the supporting chair. The seat itself is of fine quality white duck and is washable. It folds into a package 12 by 15 by 2 inches, weighs only three pounds and may be used in the automobile or as an auxiliary chair wherever needed. The idea is carried out further in swings and foldable cradles.—The Perfection Manufacturing Co., 2701-15 North Leffingwell Avenue, St. Louis, Missouri.

Rock-a-Bye High Chair Attachment

Rubber Snubber for Automobiles

The powerful resiliency of high tensile rubber is utilized to snub or hold in check the side sway and violent vertical pitching of automobiles operated over bad roads. The device is as simple as a safety pin, and for its job just as effective. It is just a strap of high quality rubber specially cured. Both ends of the strap are clamped to the car and the loop is passed under the axle of the car. Careful experiment showed just how much strength is required to absorb the bumps, steady any make of car, and balance the unsprung weight of axles and wheels. The installation of these snubs is the simplest of any on the market, as there are no holes to be bored in the frame of any make of car.—Lewis Rubber Snubber Co., 112-116 South Third Street, Yakima, Washington.



Lewis Universal Rubber Snubber

THE "PARIS DANSE BELTS"—BONWIT TELLER & CO., FIFTH Avenue at 38th street, New York City—are made of moiré ribbon and satin with elastic back or side sections. The one with side sections is intended for stouter figures and the elastic is woven in a graduating line four inches shorter at front than back.

Hard Rubber Pen and Pencil Combination

A combination pencil and pen which is of especially attractive appearance is called the "Ever-Rite." Its cap is finished at one end with an eraser so that when the pencil is in use the pen is covered up and the eraser is in position for service if required. —M. S. Rodenberg Co., Baker & Eddy streets, Providence, Rhode Island.

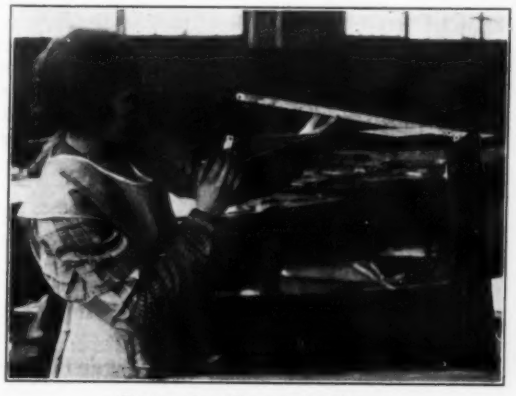
Cone-Seal Rubber Tank Ball

A new item on the market which is of particular interest to plumbers and jobbers is the cone-seal rubber tank ball illustrated. It is made of extra quality white rubber with a hard reinforced top and soft bottom and is designed to afford positive protection against flat seats and soiling. The individual cartons in which the balls are marketed are so designed that the ball is prevented from resting on its seat, thus eliminating the possibility of indentations.—Lavelle Rubber Co., 413-421 Franklin street, Chicago, Illinois.

Lavelle Rubber Tank Ball

"GlassMobile" Curtains

The special feature of the glass curtain for automobiles which is pictured comprises a rust-proof steel frame in which the best grade of double strength glass is suspended and around which the rubberized fabric is built. The glass is supported on all four sides but the inner steel frame is hung at only three points, thus giving a flexibility which prevents glass breakage from door slamming or from travel over rough roads. The glass is never under tension, notwithstanding the snug fit and anti-rattle guarantee. The material used in finishing is the same as that used for the car top so that the curtains are seemingly a component part of the top. There is a maximum area of glass and a very small blind spot, this being entirely removed when in ventilating position. The entire set of panels fits into a hollow container inside the car, so that they are readily available.—GlassMobile Co., Detroit, Michigan.



Fitting the Glass to the Frame

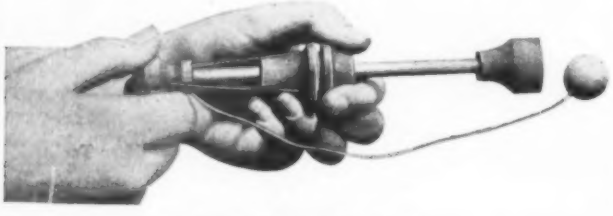
Felt-Top Sponge Rubber Chair Cushion

The Frazier "Free Air" cushion illustrated is composed of new live rubber in which certain ingredients are used to develop a desired porous structure in which the air pockets can be completely deflated. The compound is tough and long wearing and the resilience and cushioning are permanent features, since the rubber structure cannot pack and become hard. A heavy layer of brown or green leather is vulcanized to the top, and the underside of the cushion has a pebbled surface which affords a good grip and keeps the cushion in place without the use of straps. It is made in three sizes for chairs and three for stools.—American Utilities Sales Co., Metropolitan Building, Akron, Ohio.

Frazier Free Air Cushion

Pop-Gun with Captive Rubber Projectile

One of the most unfailingly popular all-year-round toys is the noise making gun with rubber ball projectile held captive by a rubber cord which is pictured. The gun itself is of wood and is manufactured to retail at small cost.—F. D. Peters & Co., Gloversville, N. Y.



Peters Wooden Toy Gun

Rubber Specialties for the Office

Sponge rubber is finding an assured place in the manufacture of office accessories. Rubber inkwell stands are made of high grade rubber in attractive design, and they cost less, the manufacturers claim, than do those made of glass, besides being practically indestructible and incapable of marring the finest polished surface. Flexible rubber desk pads molded in one piece and guaranteed against deterioration, lie flat on the desk, stay where they are put, and can be easily cleaned with soap and water. There is no possibility of the corners ripping or bulging, and the makers of this pad state that they have proved that it will not "sweat" the desk. The illustration shows the construction of a sponge rubber chair cushion, which is described as comfortable, cool, durable and sanitary, and provided in four sizes and five colors.—A. H. Irvin Co., Inc., 1015 Chestnut Street, Philadelphia, Pennsylvania.

Irvin Sponge Rubber Chair Cushion

SHOES MADE FROM OLD AUTOMOBILE TIRES ARE BEING WORN by workers in Spain.

Sponge Rubber Foot Easers and Arch Supports

The sponge rubber "Sanagene" shown in the accompanying illustration is a full length inner sole with raised instep which may be trimmed or beveled off with a knife to suit the individual requirement. It is provided with a leather cover, which is vulcanized to it, thus obtaining the resiliency of the sponge rubber cushion combined with the smoothness and pleasant "feel" of the usual leather inner sole. The rubber gently massages the muscles and ligaments of the foot, thus correcting foot troubles. "Soxos" products comprise an arch support and heel corrector, also of sponge rubber and leather, for flat foot and fallen arch, as well as for normal use as a shock absorber and as a preventive of such foot troubles. —Thornley & Booth, Ltd., Boston Mills, Hyde, Cheshire, England.

Sponge Rubber Inner Sole

"Soxos" Arch Support

Insulating Rubber Glove and Sleeve Combined

The special rubber insulating glove and sleeve shown in the illustration is designed to furnish protection against voltages ranging from 3,000 to 15,000. The gloves or mittens are from 11 to 18 inches long and the sleeves go on over the gauntlets of the gloves, a connecting rubber band across the back serving to hold the sleeves well up over the shoulders. As protection for workers in acids the sleeves meet the standard requirements for breakdown tests—30,000 volts. —Mathias-Hart Co., 101 Halsey street, Newark, New Jersey.

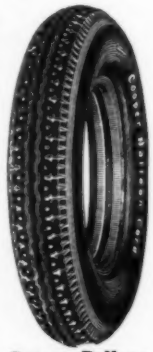
Courtesy of Scientific American.

Rubber Insulating Sleeve

Balloon Cords for All Size Rims

The extreme flexibility which provides the balloon tire with maximum riding comfort and reduces the strain on the tire from within is combined with toughness and strength in the Cooper cord illustrated, each strand of the fabric being entirely surrounded by high grade rubber. In this way any tendency to heat or chafe is overcome and the load is successfully carried at 20 to 30 pounds air pressure.

These balloons are applicable to any modern type of wheel without change of rims, every size being provided, even to fit 30 x 3½ clincher rims for Ford, Chevrolet, and other light cars.—The Cooper Corporation, Cincinnati, Ohio.



Cooper Balloon

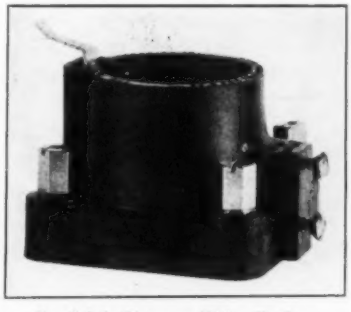
Endless Laminated Cord Fan Belt

The Vulco Cord V-Belt illustrated is built like a cord tire. The cross-section shows the cord construction and explains the non-stretch and practically unbreakable properties. The belt is endless and is molded to exactly fit the pulley, thus eliminating any slip. The sizes are standardized and one size will fit several different makes and models of cars. V-belting of the same laminated construction is also supplied, on reels in 50 and 100-foot lengths. The belting is built up of sections put together with coppered rivets. These sections overlap so that the belt is three-ply from end to end. The Vulco flat belt fits any car. For cars requiring flat open belts and for shaft drives flat belting is furnished in 25, 50, and 100-foot rolls, in any width from one to three inches.—The Gates Rubber Co., Denver, Colorado.

Vulco-Cord Flat Belt

Molded Endless V-Belt

The Goodrich New Radio Tube Socket



Goodrich Vacuum Tube Socket

The vacuum tube socket illustrated is constructed of a hard rubber compound which the manufacturers claim has a minimum of free sulphur bloom when vulcanized and an extremely high softening point. The insulating value of its properties are enhanced by efficient mechanical arrangement. A spring lock has been perfected to avoid twisting of the tube when inserting or removing it from the socket, thus insuring quietness of operation, it having been found that the cement used in sealing the tube in its base is not strong enough to withstand the hard twisting it sometimes receives. Other special features are the wiping type contacts, slotted terminal nuts, and an arrangement for either base or panel mounting, which makes the socket adaptable for any hook-up.—The B. F. Goodrich Co., Akron, Ohio.

New Hard Rubber Cue Tip

The hard rubber cue tip illustrated has an internal screw thread by means of which the tip base, also of hard rubber, screws into the ferrule until it meets the end of the cue stick. At the same time the shoulder on the tip base meets the end of the ferrule. The tip proper is of softer composition, according to the type of tip desired, and is cured with the tip base, thus insuring a permanent job. The ferrule is somewhat thinner than is usual and permits a heavier point on the portion of the stick entering the ferrule, thus eliminating breakage at that point. The manufacturer claims that the hard rubber tip is decidedly superior to the best leather tip; that it insures a straight cue because gluing is obviated, and that it is possible to change tips in a few seconds if desired.—H. P. Moore, 459 Olive street, Cuyahoga Falls, Ohio.

Hard Rubber Ferrule and Tip

A Family of Sponge Rubber Bathtub Dolls

That the popular bathtub dolls made of sponge rubber may be as artistic as they are utilitarian is proved by the accompanying illustration. The designer and patentee has designated them the "Scrub Family," for they are not merely to keep the baby amused in the bath but to take the place of washcloth and sponge. The dolls are made entirely of sponge rubber, terry cloth and soft yarn, and, being washable, they make attractive sanitary dry toys as well. Bright fast colors are used and Squire Scrubb with his whiskers, Mrs. Scrubb with her baby in arms, the governess and several children are very cleverly represented. Mally Peabody Beach, Ridgefield, Connecticut, is the patentee, and Chandler & Collier, Inc., 1252 North Negley avenue, Pittsburgh, Pennsylvania, is the sole manufacturer and distributer in the United States.

Sponge Rubber and Terry Cloth Dolls

Barking Dog Rubber Bulb Toy

Toys of this type have been on the European market for some time and they are now being made in the United States. The dog head is made of cast alloy and is finished in assorted colors. The bulb is of heavy molded rubber and when it is squeezed a sound closely resembling the bark of a dog is emitted.—The Eagle Rubber Co., Ashland, Ohio.

"Eagle Brand" Barking Dog

Rubber Buffer Strips on Subway Car Doors

In order to provide for the greater safety of the traveling public, the multiple unit door control system has been developed in Greater New York and utilized on subway cars. The edge of the door of this type of car is cushioned with rubber over its entire length so that should a hurrying passenger attempt to get through a closing door no injury would be suffered by the blow, since the pressure of only a few ounces on the door causes it to reverse its movement automatically and reopen.

The Editor's Book Table

Book Reviews

"RUBBER PRODUCING COMPANIES, 1924, OFFICIAL GUIDE FOR Investors in Rubber Shares." Compiled by The Mincing Lane Tea & Rubber Share Brokers' Association, Limited. Published by the Financial Times," 72 Coleman street, London, E.C.2, England. Paper, 645 pages, 6 x 9 inches.

As in previous issues, this 1924 edition of a well-known work contains full particulars regarding all rubber companies whose shares are dealt in on the London Stock Exchange, the information including officials, capital, acreage, purchase price, dividends, accounts, crop estimates, etc. An interesting feature of the present edition is the inclusion of data concerning practically all Ceylon tea companies which are growing rubber.

"THE ACIDITY OF RAW RUBBER" BY G. STAFFORD WHITBY. Paper, 27 pages, 5½ by 8½ inches. Illustrated. Author's Reprint from *Rubber Age*, London.

A comprehensive investigation of the acids in rubber and their function. Read before the Institution of the Rubber Industry, London Section, September 1, 1924.

"CONSTITUTION, BY-LAWS AND RULES OF THE RUBBER TRADE Association of New York, Inc." Paper, 68 pages, 5½ by 8½ inches.

All by-laws, rules and regulations promulgated prior to December 1, 1924, are superseded in this publication, which defines the duties and indicates the work being accomplished by this well-known organization. Under the headings "Rules Governing Arbitration" and "General Rules" certain questions of importance to the industry are discussed, such as Shipment Contracts, Duty or Tax, Brokerage, Standard Quality, Weighing, Sampling, etc. Other useful data are arranged under the caption "Clearing Department." The Rubber Trade Association includes among its members the leading crude rubber importers, dealers and brokers. The secretary and manager is J. P. Sullivan, 75 Maiden Lane, New York, N. Y.

New Trade Publications

MANY ILLUSTRATIONS AND DATA REGARDING IMPROVEMENTS IN power equipment are included in a large publication entitled "The Engineering Achievements of the Westinghouse Electric and Manufacturing Company for the Year 1924," as prepared by H. W. Cope, assistant director of engineering at the Westinghouse plant, East Pittsburgh, Pennsylvania. A section of this publication is devoted to development in the power equipment of rubber mills.

MUCH INFORMATION IN CONNECTION WITH RECORDING, INDEX, and industrial thermometers, hydrometers, temperature regulators, etc., appears in a fully illustrated catalog entitled "Tycos Instruments for the Rubber Industry," which has been prepared by the Taylor Instrument Companies, Rochester, New York.

UNDER THE TITLE "R. & H. CHEMICALS FOR RUBBER" THE Roessler & Hasslacher Chemical Co., 709 Sixth Avenue, New York, N. Y., has issued a paper-covered set of 51 detachable pocket size loose-leaf pages covering their rubber chemicals, including accelerators. The latter are systematically classified and described and their characteristic curing curves are shown. The booklet also contains a number of pages for notes and charting of additional curves. The data will be greatly appreciated by rubber chemists and compounders because of its reliability and convenient form for reference.

A NEW ILLUSTRATED CATALOG ENTITLED "CRESCENT AND OTHER Thermometers for All Industrial Requirements" contains full descriptions and specifications regarding goods manufactured by the American Schaeffer & Budenberg Corporation, Berry and South Fifth streets, Brooklyn, New York.

AN ILLUSTRATED CATALOG ENTITLED "ROSS MIXING AND GRINDing Machinery for All Purposes" includes equipment for the rubber industry, and is being issued by Charles Ross & Son Co., 148-156 Classon avenue, Brooklyn, New York.

"OPERATING EXPENSES IN THE RETAIL AUTOMOBILE TIRE AND Accessory Business in 1923," represents a compilation of data obtained by the Harvard University Bureau of Business Research, Cambridge, Massachusetts, in a study concerning conditions in the tire dealers' industry.

THE ANNUAL REPORT OF THE DIRECTOR OF THE BUREAU OF Standards to the Secretary of Commerce for the fiscal year ended June 30, 1924, has been published by the Government Printing Office, Washington, D. C. Investigations include tests of automobile tires, particularly balloon casings, and also proposed tests of rubber heels.

THE STATISTICAL SERVICE OF THE RUBBER ASSOCIATION OF America has been broadened by Bulletin No. 21 which shows graphs and figures for a period of years covering tire shipments for original equipment and to dealers; United States crude rubber consumption and imports; inventory, production and shipments of bicycle and motorcycle tires; and leather boot and shoe production compared to rubber heel shipments.

"DEVELOPMENT OF THE STANDARD NUMBERED COTTON DUCK Specification." A comprehensive analytic study of Numbered Cotton Ducks including test methods, results of tests, discussion of results, supplemented with United States Government specification for Numbered Cotton Duck, Federal Specifications Board, Specification No. 53.

AN ILLUSTRATED AND ATTRACTIVELY PRINTED BULLETIN ENTITLED "Birmingham Rubber Mill Machinery Lubrication" is being sent out to the industry by the Birmingham Iron Foundry, Derby, Connecticut, manufacturer of special equipment for rubber factories. Some of the headings of this publication are: Crackers and Washers, Grinders, Mixers and Refiners; Calenders; Electric Motor Drives, and Characteristics of Recommended Lubricants. The Gargoyle lubricants specified in the bulletin are manufactured by the Vacuum Oil Co., New York, N. Y.

Recent Articles Relating to Rubber

Flocculating and Coagulating Powers of Coagulating Agents for Rubber Latex. The flocculating power of any substance is the inverse of the smallest quantity capable of bringing about the formation of the first flocks in the latex, whilst the coagulating power of the same substance is the inverse of the smallest quantity capable of causing the formation of a clot. For the same latex, the coagulating and flocculating powers of different agents are proportional to one another.—F. Heim and R. Audubert, *Comptes Rendu*, 1924, 179, 209-210.

Heat of Combustion of Natural and "Sulphuric Acid Caoutchouc." The heat of combustion of plantation pale crêpe rubber, approximately 10,700 calories per gram, is markedly lower than that of natural rubber and depends on the degree of internal polymerization.—F. Kirchhof and O. Matulke, *Berichte der Deutschen Chemischen Gesellschaft*, 1924, 57, 1266-1270.

Diprene, a New Terpene from Isoprene. —O. Achan, *Annalen der Chemie*, 1924, 439, 221-232.

Latex: Its Chemistry and the Development of Its Industrial Applications. A comprehensive lecture on rubber latex as to its constitution, properties and uses.—A. Van Rossem, *Rubber Age*, London, December, 1924, 523-538.

Formic Acid as a Coagulant. —H. P. Stevens, *Bulletin of the Rubber Growers Association*, November, 1924, 697-698.

Gutta Percha: Its Preparation and General Properties. A lecture by C. W. H. Howson before the Institution of the Rubber Industry, November 3, 1924.—*Rubber Age*, London, December, 1924, 512-523.

Research Work on the Plantations. Discusses agricultural and laboratory research.—Major B. J. Eaton, *India Rubber Journal*, December 13, 1924, 15-19.

Vulcanization and Accelerators, Part I. Theory of vulcanization. Serial.—André Dubosc. *Rubber Age*, New York, December 10, 1924.

The Counter-Pressure Machine in the Rubber Industry. Parts I and II.—*Gummi Zeitung*, November 21, 1924, 223-225 and November 28, 1924, 257-258. Graphs and table.

Investigation of the Coagulation of Latices. I. A study of the mechanics of coagulation.—M. R. Audubert, *Revue Generale des Colloides*, November, 1924, 321-329. Tables, illustrations.

Bark Renewal in Hevea Brasiliensis. —Dr. J. Schweizer, *Archief voor de Rubber Cultuur in Nederlandsch-Indië*, October, 1924, 651-680. Tables, diagrams.

Rubber from Periodical Tapping. —O. de Vries and W. Spoon. *Archief voor de Rubber Cultuur*, October, 1920, 687-715. Tables, graphs.

Coagulation Phenomena in Hevea Latex. —O. de Vries and N. Beumée, Nieuwland. *Archief voor de Rubber Cultuur*, October, 1924, 726. Tables.

Recent Vulcanization Processes. Descriptive table of patents. —Dr. S. Halen. *Kunststoffe*, October, 1924, 149-152.

Ebony and Ebony Substitute. I. Various patents described.—Emil J. Fisher. *Kunststoffe*, November, 1924, 164-165.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(503) Prospective manufacturer requests names and addresses of manufacturers of machinery for making play balls and hollow rubber toys.

(504) Inquirer wishes to get in touch with manufacturers of a substitute for rubber cement in backing cloth.

(505) Subscriber asks information concerning an instrument for regulating or indicating the temperature of calender rolls.

(506) We are asked where yellow open-mesh or blow sponges may be obtained.

(507) Addresses are requested of manufacturers of litharge and asbestine.

(508) A list of manufacturers of molded rubber goods is requested.

(509) From India comes a request for information concerning and sample of rubber glass.

(510) Inquiry is made for source of supply of naphtha for use in making dipped goods.

(511) From Germany comes a request for addresses of concerns making rubber soled tennis shoes.

(512) Information is desired concerning source of supply of devices for applying washers to heel molds.

(513) Another inquirer in Germany asks whether there are important asbestos industries in countries other than America, England and Germany. Also requests a list of American makers of asbestos cloth.

(514) Inquiry is made for address of manufacturer who supplied mechanically frictioned rubber used in brake shoe for amplifier in Columbia type BC phonograph 15 years ago.

(515) We are asked for addresses of manufacturers of rubber hose armoring machines.

(516) Request is made for a list of manufacturers of special ink for marking dipped goods.

(517) A subscriber desires to get in touch with a manufacturer of a machine for cutting rubber trimmings into small pieces which would pass through screens of ¼ to ½-inch mesh.

(518) We are asked for a list of manufacturers of fabric pullers and beaders.

(519) We are asked for information concerning a machine for cutting old rubber tires from solid truck tire rims.

(520) Advice is desired concerning source of supply of softeners used in manufacturing friction tapes.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th Street, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
12,325	Ireland—Rubber boots and rubber soled shoes.	Purchase or agency
12,389	Germany—Rubber scrap	Agency
12,390	Paraguay—Golf and tennis balls	Purchase and agency
12,391	Argentina—Rubber boots and shoes, rubber heels, and rubber soled shoes	Agency
12,410	Algeria—Automobile tires and rubber hose for water and wine use	Agency
12,522	New Zealand—Rubber heels	Agency
12,523	England—Truck tires, solid band	Purchase
12,524	France—Rubber shoes and rubber soled canvas shoes	Purchase
12,525	Canada—Hard rubber jars and covers for batteries	Purchase
12,526	India—Rubber toys, especially balloons	Purchase and agency
12,527	Lithuania—Dress shields, with rubber plates	Purchase
12,528	Mexico—Rubber heels	Exclusive agency
12,529	Lithuania—Rubber heels	Purchase
12,549	Lithuania—Rubber sheeting for cribs	Purchase
12,595	South Africa—Rubber household specialties	Agency
12,665	England—Rubber boots for men, women and children	Agency
12,666	Greece—Rubber heels	Agency
12,667	Lithuania—Crib sheeting	Purchase
12,671	Haiti—Tires and tubes	Agency
12,679	Hungary—Tires and tire repair materials	Purchase and agency
12,732	Germany—Rubber toys and novelties and sporting goods	Purchase
12,773	Sweden—Rubber belting and surgeons' gloves	Agency

FOREIGN RUBBER TRADE INFORMATION

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
683	"Tire Market of Porto Alegre, Brazil," etc., etc.
*685	"October Imports of Rubber Tires and Tubes."
687	"Market for Rubber Footwear in Great Britain," etc., etc.
*689	"Market for Automobile Tires in New South Wales."
690	"Tire Market of Port-au-Prince, Haiti," etc., etc.
692	"Market for Fire Hose in Germany," etc., etc.
*693	"Market for Automobile Tires in Yorkshire."
694	"Market for Rubber Heels in Algiers, Algeria," etc., etc.
*696	"Market for Rubber Heels in Brazil."
697	"Tire Market of Valparaiso, Chile," etc., etc.
701	"Toy Balloons in Egypt," etc., etc.
*702	"Market for Rubber Heels in Argentina."
*703	"Retail Tire Prices in Norway."

PRESIDENT AMERICAN HARD RUBBER CO.

Fritz Achelis, president of the American Hard Rubber Co., 11 Mercer street, New York, died at his home 550 Park avenue, New York, on December 24. His obituary will be published in the February number.

News of the American Rubber Trade

Rubber Industry Outlook

EVERY branch of the rubber industry met with steadily increasing demand for its goods during the last half of 1924 and is anticipating even better prospects for business in 1925. In automobile tires there was no fall seasonal decrease of output and schedules were well maintained to the year's end. The better to handle the business of the new year, a number of tire plants in Akron, Ohio, and elsewhere have installed additional manufacturing facilities and all plan for capacity production during the period from January 1 to July 1, 1925.

This schedule means an output of over 15,000,000 tires in the Akron district alone. This rate is sure to be increased if automobile production proceeds as planned. Domestic tire requirements are expected to exceed 50,000,000 by a good margin the coming year.

Fabric tires have held their own as against cords for use on the less expensive cars. They are apparently destined to rapidly decrease in numbers should it prove true, as rumored, that they are to be supplanted in favor of cords after January 1 in the specifications of those car makers who have hitherto been the largest users of fabric tires.

Such a radical change will mean the elimination of much old equipment and installation of new equipment both for making and curing. The change will mark a distinct advance and something like standardization at least to the extent of retaining only the acknowledged better construction.

Mechanical plants are operating full time and in some cases overtime with unfilled orders for mechanicals for industrial, railway, and agricultural purposes. The only complaint is that prices are close, with competition so keen as to reduce or eliminate fair profit in standard lines.

Rubber footwear plants are equally favored with tire and mechanical plants in closing the year with good production tickets and good business ahead.

The trade as a whole may well feel optimistic for 1925.

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Canadian Cons. Rubber Co., Ltd.	Pfd.	1¾% q.	Dec. 31	.....
Firestone-Apsley Rubber Co.....	Pfd.	3½% s. a.	Jan. 1	Dec. 27
Firestone Tire & Rubber Co.....	Com.	$1.50 q.	Jan. 20	Jan. 15
Firestone Tire & Rubber Co.....	6% Pfd.	$1.50 q.	Jan. 15	Jan. 1
Firestone Tire & Rubber Co.....	7% Pfd.	$1.75 q.	Feb. 15	Feb. 1
General Tire & Rubber Co.....	Pfd.	1¾% q.	Jan. 2	Dec. 20
Goodyear Tire & Rubber Co.....	Pr. Pfd.	$2.00 q.	Jan. 1	Dec. 20
Goodyear Tire & Rub. Co. of Calif.	7% Pfd.	1¾% q.	Dec. 16	.....
Goodyear Tire & Rubber Co. of Canada	Pfd.	1¾% q.	Jan. 2	Dec. 20
Goodyear Tire & Rubber Co. of Canada	Def.	1¾% q.	Jan. 2	Dec. 20
Hood Rubber Co.....	Com.	$1.00 q.	Dec. 31	Dec. 20
Hood Rubber Co.....	Pfd.	$1.75 q.	Feb. 1	Jan. 20
Hood Rubber Products Co.....	Pfd.	1¾% q.	Dec. 1	Nov. 24
India Tire & Rubber Co.....	Com.	$1.00 q.	Jan. 1	Dec. 20
India Tire & Rubber Co.....	Com.	$1.00 Ex.	Jan. 1	Dec. 20
India Tire & Rubber Co.....	Pfd.	$1.75 q.	Jan. 1	Dec. 20
Overman Cushion Tire Co.....	Com.	1½% q.	Jan. 20	Dec. 31
Overman Cushion Tire Co.....	Ex-Pfd.	1½% q.	Jan. 20	Dec. 31
Overman Cushion Tire Co.....	Pfd.	3½% s. a.	Jan. 10	Dec. 31
Overman Cushion Tire Co.....	2nd Pfd.	3½% s. a.	Jan. 10	Dec. 31

New York Stock Exchange Quotations

December 22, 1924

	High	Low	Last
Ajax Rubber, com.	12¾	12⅛	12⅛
Fisk Rubber, com.	12¾	12	12½
Fisk Rubber, 1st pfd.	79½	78½	79½
Goodrich, The B. F., Co., com.	36¾	35⅞	36
Goodrich, The B. F., Co., pfd. (7)	89¾	89	89
Goodyear Tire & Rubber, pfd.	89½	88	88¼
Goodyear Tire & Rubber, pr. pfd. (8)	105⅞	105⅞	105⅞
Kelly-Springfield Tire, com.	17⅝	17⅛	17½
Keystone Tire & Rubber, com.	2⅛	2	2
Lee Rubber & Tire, com.	12½	11⅞	11⅞
United States Rubber, com.	40¼	39½	39¾

Akron Rubber Stocks

December 20, 1924

AKRON

	High	Low
American Rubber & Tire, common	10	10
American Rubber & Tire, preferred	30	30
Amazon Rubber	2⅛	1⅛
Goodyear, preferred	87	83½
India Rubber, common	112	105
India Rubber, preferred	85	85
Marathon Rubber, common	24	21
Mason Tire & Rubber, common	2⅛	1¾
Mason Tire & Rubber, preferred	24	21
Mohawk Rubber, common	25	15
Mohawk Rubber, preferred	80	73
Seiberling Rubber, common	15¾	15
Seiberling Rubber, preferred	92	86
Swinehart Tire & Rubber, preferred	50	50

CLEVELAND

Firestone, common	105	98
Firestone, preferred (6)	100	99
Firestone, preferred (7)	98	95½
General Tire & Rubber, common	236	230
General Tire & Rubber, preferred	100	100
Miller Rubber, common	106	100
Miller Rubber, preferred	103½	103

New Incorporations

Airubber Corp., The, October 16 (Illinois), $200,000. J. L. Kraft, president; W. A. Withers, vice-president and general manager; Edwin P. Snyder, secretary, and C. J. Howel, treasurer. Principal office, 510 North Dearborn street, Chicago, Illinois. To manufacture rubber fabric goods under patented processes.

Allison-Stephens Tire Co., Inc., November 24 (New York), 100 shares no par value. Incorporators: M. G. Owens, 183 Wallace avenue; R. E. Allen, 400 Elmwood avenue, both of Buffalo, and M. E. Patterson, Tonawanda, N. Y. Principal office, Manhattan. To manufacture tires.

Arvidson Tire Co., Inc., December 5 (New York), 100 shares no par value. Incorporators: R. E. Allen, 400 Elmwood avenue; C. C. Jewett, 77 Bryant avenue and M. G. Owens, 183 Wallace avenue, all of Buffalo, N. Y. Principal office, Manhattan. To manufacture auto tires.

Bergougnan Tire & Rubber Co. of New Jersey, Inc., December 4 (Delaware), $1,600,000. Incorporators: M. M. Lucey, M. B. Reese and L. S. Dorsey, all of Wilmington, Delaware. Principal office, with the Colonial Charter Co., Wilmington, Delaware. To deal in rubber tires, tubes, valves, shoes, casings and all other articles relating thereto.

Carolina Rubber Co., October 27 (North Carolina), $300,000. Justus Collins, president, Charleston, West Virginia; C. S. Munro, president and general manager, Charleston, West Virginia; George E. Rusher, secretary, Salisbury, North Carolina, and Z. E. Kitchen, treasurer, Cincinnati, Ohio. Principal office, Salisbury, North Carolina. To manufacture tires and tubes.

Hutten Tire & Rubber Corp. (New York), $100,000. Incorporators: H. M. Burr, 59 Nagle avenue, New York City; Gussie Blank, 380 Bushwick avenue and Edward McKinney, 519 79th street, both of Brooklyn, N. Y. Principal office, Manhattan. Will handle tires and rubber goods.

E. K. Merrihew Co., The, November 26 (Massachusetts), $50,000, preferred stock, par value one hundred dollars and 2,500 shares of common stock without par value. Edward K. Merrihew, president and treasurer, 42 Eldredge street, Newton; Richard H. Wiswall, clerk, 12 Orne square, Salem; J. Preston Rice, 95 Prince street, West Newton, Director; Samuel M. Felton, director, 58 Brimmer street, Boston, and Francis G. Goodale, director, Webster Road, Weston, all of Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal, whether as principals, agents, commission merchants, brokers, or otherwise, in hides, skins, leather and rubber of all kinds and substitutes therefor and all by-products and accessories thereof.

Pocono Rubber Cloth Co., The, December 12 (New Jersey), 3,000 shares of 7 per cent cumulative capital stock of the par value of $100 each and 2,000 shares of common stock without par value. Incorporators: Neil E. Bowman, Theodore S. Cart and Robert H. Gulliver, all of Trenton, New Jersey. Principal office, East State street near Hamilton Township, Trenton, New Jersey. To purchase and sell rubber and all goods or materials of which rubber is a component part.

Rolls-Right Tire Corp., December 12 (New York), $1,000. Incorporators: C. F. Kingsley, 55 Hanson place, Brooklyn; Almora Meiklejohn, 400 W. 153d street, New York City and Cecile Nolan, 940 68th street, Brooklyn, N. Y. Principal office, Manhattan. To carry rubber goods.

Rub-Ce-Co., Inc., November 1 (Massachusetts), $25,000 preferred stock and 7,500 shares of common stock without par value. Aage Ewaldsen, president, 157 G street, Boston; Frank M. Stevens, treasurer, Reading; James M. Swift, clerk, 411 Shawmut Bank Building, Boston; Orlando C. Moyer, director, 201 Devonshire street, Boston, all of Massachusetts. Principal office, Boston, Massachusetts. To manufacture, buy, sell and deal in rubber cement at wholesale, retail and on commission; dealing in all materials necessary for the manufacture of rubber cement and other products, including machinery, tools and supplies of every nature necessary or useful therefor.

Ruth Puncture-Proof Automobile Wheel Co., November 15 (North Carolina), $100,000. T. L. Ruth, president, Wilmington, North Carolina; R. L. Jackson, vice-president, Wilmington, North Carolina, and T. C. Ruth, secretary and treasurer, Pittsboro, North Carolina. Principal office, Wilmington, North Carolina. To manufacture a new puncture-proof automobile wheel.

Uncle Willie's Tire Stores, Inc., December 2 (Delaware), $25,000, par value $10.00. Incorporators: Franklin L. Mettler; M. E. Mettler and B. M. Gilkey, all of Wilmington, Delaware. Principal office with Franklin Mettler, 832 Market street, Wilmington, Delaware. To buy, sell and repair automobile tires and tubes.

Zev-Union Tire Corp., December 12 (New York), $10,000. Incorporators: D. C. Kingsley, 55 Hanson place, Brooklyn; Almora Meiklejohn, 400 W. 153rd street, New York City, and Cecile Nolan, 940 68th street, Brooklyn, New York. Principal office, Manhattan. To carry rubber goods.

The Rubber Trade in the East and South

Rubber plants generally are gaining steadily in volume of orders and output. The customary lull in activity which frequently marks the holiday season and annual inventory period is less marked than common. Plants generally are stopping only the briefest interval for stock taking. Deliveries of supplies have been limited to current needs as far as possible although generous commitments have been the rule for the early months of the new year.

The tire output is well maintained and mills generally are preparing for high scheduled output for the next six months. In boots and shoes orders are brisk, particularly for warm winter and heavy goods. These are no longer ordered six months in advance as formerly but are called for practically in the season of sales and use. The output of heels is heavy, with prices keenly competitive. Now and then large manufacturers of leather shoes enter the rubber heel manufacturing field to supply their own needs. An instance of this has recently been reported from St. Louis.

Mechanical rubber goods plants are busy with transmission and other belting, all types of industrial and garden hose and specialties. The manufacture of rubber flooring is gaining in volume and is becoming stabilized at a fair price as a recognized practical application of rubber.

Insulated wire and cable plants' output has increased in the past quarter over the preceding one, with the factories continuing at a good rate.

Status of Tire Fabric Production

The purchase of the Sanford Mills at Fall River, Massachusetts, by the Firestone Tire & Rubber Co., and the joint acquisition of the Rotch mills at New Bedford, Massachusetts, by the Goodyear Tire & Rubber Co. and the Fisk Rubber Co. were recorded in our last issue.

The acquisition of these large modern tire fabric mills in the East by these major tire manufacturers is evidence that they will eventually produce everything that is used in tire construction. The fact that Goodyear, United States, Dunlop, and Mason have operated tire fabric mills for some years indicates that the recent acquisition of more spindles is a strategic move toward greater economy in tire production.

The old line tire fabric mills that have so long served the trade will continue to manufacture and sell fabrics to the rubber industry. By producing standard fabrics, increasing output and reducing overhead the old line mills will be in a better competitive position than ever before in supplying cotton fabrics to the rubber industry.

Dunlop Activities

The Dunlop Tire & Rubber Co., Buffalo, New York, has steadily developed its distributing facilities, and at present has established 2,207 retail sales outlets. In order to serve these dealers with as little delay as possible, eleven sales divisions have also been organized in the leading cities of the country.

Dunlop sales of tires in foreign countries have also greatly increased, and to date more than 30,000 casings have been shipped from the American factory to various ports in South America, Europe, Asia and Africa.

Herbert Du Puy President of Pennsylvania Rubber Co.

Because of ill health, Charles M. Du Puy has resigned as president of the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania, and has been succeeded by his father, Herbert Du Puy, who is also chairman of the board of directors. The latter has for many years been identified with manufacturing and financial interests, and was formerly chairman of the board of the Crucible Steel Company of America, in addition to his duties in connection with the company of which he is now president.

Gutta Percha & Rubber Co. Moves Offices to Brooklyn

The Gutta Percha & Rubber Manufacturing Co., formerly at 350 Madison avenue, New York, N. Y., has removed its executive and sales offices to its factory office building, 53 Franklin avenue, Brooklyn, New York. The change was considered advisable in order to develop greater efficiency in production and sales.

Changes in U. S. Rubber Co.'s Personnel

On November 14 the following organization changes were announced by Walter Gussenhoven, manager of mechanical sales for The United States Rubber Co., 1790 Broadway, New York, N. Y.: H. L. Williamson becomes assistant manager of mechanical sales, while H. A. Everlien will also serve in the same capacity, but devoting his attention principally to branch activities. G. R. Kyle has also been appointed manager of mining and conveyor belt sales. All three men have been connected with the organization for more than fifteen years, Mr. Everlien's association with the company beginning twenty-one years ago.

Other transfers include the appointment of Harry G. Warren as manager of mechanical sales at the Pittsburgh branch, and of James W. Greenawalt as manager of mechanical sales at Cleveland, Ohio.

Hodgman Receivers Report Progress

J. Newton Gunn and George Auchincloss on December 10 rendered to the District Court of the United States for the Southern District of New York their first report on the affairs of the Hodgman Rubber Co. The receivers report gratifying results from the consolidations, economies and reorganization so far effected.

The total assets of the company September 23, 1924, when the receivership began, were $2,684,714 and on December 1, 1924, $2,719,031, an increase of $34,317. Cash on hand and in banks increased the same period from $13,196 to $122,141.

In conclusion the receivers state: "There seems to be no doubt but that the position of the company under a conservative policy as to purchases and operation, and with an aggressive sales policy, is more profitable as a means of working out the present situation than any other or more radical policy."

Goodyear Rubber Co. Consolidation

Beginning January 1, 1925, the Goodyear Rubber Co., 787 Broadway, New York, N. Y., will be the sole distributer of Gold Seal, Square Deal, and Snag-Proof footwear, as manufactured exclusively for this company by the Goodyear Rubber Co., Middletown, Connecticut, and the Lambertville Rubber Co., Lambertville, New Jersey. The entire output of these two plants will be distributed through Goodyear branch stores located in New York, Philadelphia, Chicago, St. Louis, St. Paul, Milwaukee, Kansas City, San Francisco, and Portland, Oregon.

With increased facilities the Lambertville Rubber Co. will be able to largely extend its volume of business without in any way losing its identity. Charles C. Alexander, formerly sales manager of the Lambertville company, has been made director of the footwear sales division and general manager at New York of the Goodyear organization, while W. T. Scott will have charge of the Chicago office, with a large midwestern territory. Howard M. Alexander has been placed in charge of the Philadelphia store maintained by

the Goodyear Rubber Co. In general the consolidation will not cause any changes in the factory organization of the Lambertville plant. Thomas R. Shepard is treasurer of the Lambertville Rubber Co.

The Moore-Merritt Rubber Co.

The recently organized Moore-Merritt Rubber Co., which has purchased the plant at Chattanooga, Tennessee, formerly owned by the DuBois Rubber & Tube Co., is the only concern in the South specializing in the production of a full line of mechanical rubber goods. For the next few months, however, the new organization will confine its output to shoe soles, steam packing, belting, brake lining, and "Litholite" leather, the latter being a composition for use in the making of hand bags, suit cases, portfolios, etc., the material being also especially adapted to the construction of shoe soles.

Thomas L. Moore, who is the organizer and president of the Moore-Merritt company, was formerly connected with the Firestone and General rubber companies, and has been in the tire business for a number of years. His associates include C. W. Merritt, vice-president; R. A. Barber, secretary; and C. E. Barber, assistant secretary and treasurer. The Moore-Merritt company is capitalized at $300,000.

The Moore-Merritt Rubber Co., Chattanooga, Tenn.

Eastern and Southern Notes

Allied Consumers & Producers, Inc., 300 Madison Ave., New York, N. Y., and 420 Metropolitan Building, Akron, Ohio, has been organized to establish contracts for American manufacturers with the sources of supply of raw materials produced in foreign countries, and also to handle the foreign distribution of American manufactured products through the organization of a foreign subsidiary company. Officers of the company are: Hanford E. Finney, president; John Birney, vice-president; Albert C. Baylis, secretary-treasurer.

Group insurance protection totaling $113,000 has been obtained by 82 employes of the Bishop Gutta Percha Co., 420 East 25th street, New York City, N. Y. The insurance was issued by the Metropolitan Life Insurance Co. on a cooperative basis whereby the employer and the employes jointly pay the premiums. The coverage for individuals ranges from $1,000 to $3,000. Supplementing the insurance contract are free visiting nurse service and the distribution of health booklets.

Theodore G. Sullivan, Jr., for several years connected with the Clapp Products Co., a subsidiary of the E. H. Clapp Rubber Co., has joined the Wishnick-Tumpeer Chemical Co., Inc., 130 44th street, Brooklyn, New York, as technical manager of the latter company's rubber division.

An address on the subject "Zinc Oxide and Lithopone as Paint Pigments" was given by E. W. Boughton on the evening of November 20 before the Chemical Society of the Brooklyn Polytechnic Institute. Mr. Boughton is a sales engineer connected with the New Jersey Zinc Sales Co., 160 Front street, New York, N. Y.

Business for the last few months with the Rubber Regenerating Co., Naugatuck, Connecticut, has been excellent, with plants running at capacity. The output is to be increased as fast as circumstances permit. The organization specializes in the improvement of crude and waste rubber, and maintains factories both at Naugatuck and Mishawaka, Indiana. E. A. Anderson is president.

A. C. Burrage has purchased the entire stock of the bankrupt Atlantic Dyestuff Co., Portsmouth, New Hampshire, including finished goods, raw materials, and intermediates. The Court has granted petition of the trustees to disclaim title to the real estate of the bankrupt organization, such property including buildings and machinery.

On December 1 the Boston offices of J. C. Haartz Co. were removed to the plant maintained by the organization, the address hereafter being 30 Lenox street, New Haven, Connecticut.

T. E. Beddoe has been transferred to the Philadelphia offices of the Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, while Paul Darlington leaves the engineering department of the Milwaukee factory to become a member of the New York staff.

R. D. Wood, 400 Chestnut street, Philadelphia, Pennsylvania, builds a complete line of standard hydraulic equipment used in the manufacture of tires and mechanical goods. Through long experience and excellent shop facilities this concern is able to design and build special hydraulic machinery for the rubber trade.

The Carolina Rubber Co., Salisbury, North Carolina, has been organized for the purpose of manufacturing "Clover Leaf" and "Long Distance" cord tires and "Heavy Duty" fabrics, and also red and gray "Clover Leaf" tubes. Executives of the new concern include: Justus Collins, president; C. S. Munro, vice-president and general manager; Geo. E. Rusher, secretary; Z. E. Kitchen, treasurer; Albert L. Bell, sales manager; L. B. Schleeder, superintendent.

The Calvert Tire Co., Light and Lee streets, Baltimore, Maryland, handles solid, cushion and pneumatic truck tires, as well as passenger car tires and accessories. At present the company is carrying a line of Goodyear solid tires, and later will handle Goodyear pneumatic casings as well. The Calvert organization has recently moved into new quarters, and has also opened a salesroom in Baltimore at 140 West Mt. Royal avenue.

The Butler-Goodman Motor Co., 416-424 Monroe avenue, Memphis, Tennessee, reports a good demand for balloon tires. S. H. Butler is president and treasurer.

The Miami Tire Co., Miami, Florida, jobber and distributer of tires, automobile accessories and replacement parts, is planning the construction in Miami of a large and thoroughly equipped establishment, the first unit to be completed about June 1, 1925. N. O. Penny is president of the organization.

The Blackwood Tire Co., 912-20 Broadway, Nashville, Tennessee, is meeting with much success in its sales of all lines of Goodyear tires. H. O. Blackwood is president.

The Rubber Trade in New Jersey

The New Jersey rubber manufacturers are quite optimistic over the future, and several of the leading men in the industry are confident that there will be no serious change in business conditions from now on. With the presidential election over and the country in a more settled condition, money is being spent more freely. The increase in crude rubber imports is much greater than this time last year which is indicative that the general output of the factories is larger.

Trenton manufacturers are now busy in making cotton and molded hose for the spring trade. This will be stored in the ware-

houses and ready for immediate shipment upon the receipt of spring orders. Hard rubber manufacturers continue busy, one concern having increased its working force of late. While the majority of the tire manufacturers are working to capacity there are some concerns that are not operating on full tickets.

New Jersey Rubber Manufacturers' Association

At the annual meeting of the New Jersey Rubber Manufacturers' Association, held at the Stacy-Trent Hotel, Trenton, New Jersey, Charles E. Stokes, president of the Home Rubber Co., was re-elected president. Other officers reelected included: vice-president, Frank Voorhees, Voorhees Rubber Co., Jersey City, New Jersey; treasurer, A. Boyd Cornell, secretary-treasurer of the Hamilton Rubber Manufacturing Co.; secretary, C. Dudley Wilson, secretary-treasurer of the Luzerne Rubber Co. The annual dinner, which preceded the election, was as usual an enjoyable affair and reflected the good fellowship existing between members of the association.

Memorial to Joseph O. Stokes

Three well-known Trenton rubber men have given contributions for the library to be established in connection with the new Masonic Temple to be erected at Trenton, New Jersey. William J. B. Stokes, treasurer of the Thermoid Rubber Co., Charles E. Stokes, vice-president and general manager of the Home Rubber Co., and J. Oliver Stokes, treasurer of the Joseph Stokes Rubber Co. have contributed liberally to the Masonic library as a memorial to their father, Joseph O. Stokes, who figured prominently in Trenton's early rubber industry. The elder Stokes founded the three rubber plants which his sons now control.

New Jersey Notes

The Ajax Rubber Co., Trenton, New Jersey, closed down the latter part of December for inventory and necessary repairs. This custom is followed out each year so the factory can start the new year without interruption. The Ajax company is now operating 100 per cent and the officials are optimistic over the future.

The United & Globe Rubber Co., Trenton, New Jersey, is prospering under the management inaugurated by the reorganization. The company announces that sales and shipments have advanced and the output of various lines of mechanical goods shows considerable increase. New branches have been opened at Houston, Texas; Philadelphia, Pennsylvania; Buffalo, New York, and other cities. George F. Fisher, the new factory manager, is in charge. Peter Vredenburgh, president of the new company, has moved from Freehold to Trenton to take active interest in the plant.

The Joseph Stokes Rubber Co., Trenton, New Jersey, manufacturer of hard rubber goods exclusively, is now operating with a full force and with many orders on hand. All the hands laid off some time ago have been placed at work again.

Whitehead Brothers Rubber Co., Trenton, New Jersey, reports that business has improved during the past month. The company is especially busy in the fire hose department, where orders are being filled for the spring trade.

The Mercer Rubber Co., Hamilton Square, Trenton, is substituting electricity for steam in the plant. While the work was being done some time was lost in filling orders, but the company expects to make it up in a short time. The concern is now busy on orders for cotton and molded hose and belting.

The Luzerne Rubber Co., Trenton, New Jersey, is busy in the production of hard rubber products and especially of radio parts, for which the company has built up a large trade.

The Thermoid Rubber Co., Trenton, New Jersey, is operating to capacity and its brake lining department has many orders to fill. The tire and tube department is operating fairly well. Officials of the company are optimistic over the future.

The Trenton Rubber Mold Co., 59 Summer street, Trenton, New Jersey, will shortly become incorporated under the name of the Trenton Rubber Mold & Machine Co. The company was organized about three years ago by David W. Smith, Harold F. Sullivan, and John L. Sullivan. The last named recently sold his interest in the concern and the two former are now conducting it. The company manufactures rubber molds for heels and tires and plans to manufacture other products.

At a recent meeting of the creditors of the Spartan Rubber Co., Yardville, New Jersey, at the office of Referee in Bankruptcy Samuel D. Oliphant, Ernest C. Stahl, Jr., was appointed receiver in bankruptcy. Last summer Mr. Stahl was appointed by the United States District Court as receiver of the company. The company then went into the bankruptcy court, deeming this action the best plan to aid the creditors. The trustees will shortly hold another meeting and select a trustee in bankruptcy to wind up the affairs of the Spartan company.

The Court of Errors and Appeals recently denied an application made by Milford C. Massie, individually, and as trustee for the Brake Lining Co., a Delaware corporation, for a reargument of the recent decision of that court setting aside a decree of the New Jersey Court of Chancery under which the Asbestos Brake Co., the H. W. Johns-Manville Co., and the Thermoid Rubber Co. were ordered to make an accounting of royalties from the manufacture of brake linings and brake bands.

The Lambertville Rubber Co., Lambertville, New Jersey, announces that $1,700 was lost in wages in two months by employes not coming in to work. The company stated: "If this amount was divided up among all the employes it would make a good day's pay for everybody. The one habit which makes a person most valuable in the eyes of the employer is regularity. It is extravagant to loaf, and no one should lose a day's pay."

W. W. Sanders, factory manager of the Murray Rubber Co., Trenton, New Jersey, recently gave an interesting talk on "Rubber" at the round table conference of the Engineers' Club of Trenton, New Jersey, held at the Stacy-Trent Hotel. He spoke on rubber from the plantation to the finished product.

The annual meeting of the Fisk Flap Rubber Tube Co., will be held at the company's office, Camden, New Jersey, on January 19 for the purpose of electing a new board of directors, hearing the reports of officers, and transacting other business. William Decker, of Washington, D. C., president of the board, will preside. C. Francis Fisk, treasurer of the company, will make an extensive business trip through the south soon after February 1, 1925.

W. N. MacDonald, formerly connected with the Powertown Rubber Corporation, is now associated with the Voorhees Rubber Manufacturing Co., 20 to 56 Bostwick avenue, Jersey City, New Jersey, and specializing in mechanical rubber goods.

The Pearson Rubber Co. is, as a jobber, handling in the New England states the goods manufactured by the Lambertville Rubber Co., Lambertville, New Jersey.

The Rubber Trade in Rhode Island

Activities of the N. I. R. Co.

Settlement of election issues and acceptance by Germany of the Dawes plan are already reflecting their effect upon Rhode Island industry. The National India Rubber Co., Bristol, Rhode Island, reports increasing demands for its products from abroad. Prior to the war, Germany bought monthly $125,000 worth of rubber goods made at the Bristol plant. This stopped with the outbreak of the war, but since the acceptance of the reparations plan a change has come and it is reported that an order for nearly half a million dollars' worth of rubber shoes has been received by the National company. Foreign shipments of this class of goods was the heaviest the past month from this plant since the war began.

The plant was closed down the last week of the old year for the annual holiday but the entire plant will resume operations January 5.

All employes of the National India Rubber Co. living outside of Bristol have been notified that they must take up their residence within the town by January 1 or sever their connection with the concern. The Bristol storekeepers and others praise the management for this order and suggest that residents of Bristol should be given preference in employment. Business men and property owners in other communities, particularly in the adjacent town of Warren, maintain that it is an unjust discrimination and a hardship upon employes residing outside of Bristol. It is estimated that more than 250 persons in Warren alone will be affected by this order.

Goodyear Cotton Mills Reduce Wages

The Goodyear Cotton Mills, Inc., Danielson, Connecticut, have reduced wages but no change will be made in the working schedule, which calls for full-time operation. The mill, which is a branch of the Goodyear Tire & Rubber Co., Akron, Ohio, makes tire fabrics and employs several hundred persons. The Quinebaug and Wauregan Mills, both controlled by the same interests, are also operating under reduced wages, the cut approximating eleven per cent. About 1,000 persons are employed in these mills. With the reduction in pay, both plants have returned to full-time operations, having been on a part-time schedule since early summer.

Executive Changes Follow Sale of Rotch Mills

Negotiations have been concluded whereby Goodyear Tire & Rubber Co. and The Fisk Rubber Co. become joint purchasers of the Rotch Mills at New Bedford, which will result in a number of changes. William Harrop, general superintendent of the Rotch Mills, which have been renamed the Devon Mills, will be superintendent of the Fisk company part of the plant. Frank Burns, superintendent of the Ninigret plant in Pawtucket, also a Fisk subsidiary, is to be Mr. Harrop's assistant. Herman Coulter, assistant treasurer of the Goodyear Cotton Mills, Danielson, Connecticut, is to be transferred to New Bedford as assistant treasurer of the new Devon Mills, while the treasurer will in all probability be located at Akron, Ohio. Day and night operation of the New Bedford fabric plant is contemplated as soon as the plant can be organized into two separate units, one to be run by the Fisk and the other by the Goodyear company.

Rhode Island Notes

An addition to the plant of the Narragansett Cotton Mills, Apponaug, Rhode Island, will double the output of tire fabric. According to J. T. Hanton, superintendent, the floor space will be increased from 16,400 to 22,705 square feet. The new addition will house 22 new machines, including twisters, looms and inspection machines. Hitherto the concern has confined its work to the manufacture of fabric, but, according to Superintendent Manton, it is planned to make fabric cord.

The Carolina Co., Carolina Village, Rhode Island, has recently received sufficient orders for automobile head linings to keep the plant in operation for a number of weeks. William Hinchliffe, manager, states that the mill has orders ahead for several months and all departments are in active operation.

Roswell C. Colt, son of the late Col. Samuel Pomeroy Colt, was injured in an automobile accident on the famous Ocean Drive at the Colt estate, Bristol, on November 30. He received cuts about the head and was confined to his room for several days. The accident happened within half a mile of where Le Baron C. Colt, son of the late Judge Le Baron B. Colt and a nephew of Samuel P. Colt, was killed in June, 1916, when his automobile overturned.

At the recent meeting of What Cheer Lodge of Masons, former Governor Augustus O. Bourn, head of the Bourn Rubber Co., Providence, Rhode Island, received a service medal and bars signifying 64 years of membership.

Ernest I. Kilcup, assistant credit manager of the Davol Rubber Co., Providence, Rhode Island, was one of the principal speakers at the December dinner meeting of the Rhode Island Association of Credit Men at the Turks Head Club. Mr. Kilcup, who is vice-chairman of the National Credit Education and Management Committee, gave an interesting and instructive talk on "What Do You Know About Credit?"

In the municipal budget of Newport, for the ensuing year, provision is made for appropriations of $1,000 for new 2½-inch fire hose; $100 for new chemical hose and $250 for rubber clothing.

The Naylor Tire Co., 168-170 Front street, Pawtucket, Rhode Island, carries a complete stock of Miller and Goodrich tires, high pressure cords, and accessories.

James H. Hoar, for nearly half a century associated with the National India Rubber Co., Bristol, Rhode Island, died recently. He was born in Bristol in 1847 and as a young man entered the employ of the rubber works, where he remained until his retirement about ten years ago. For thirty years he was foreman of the vulcanizing department. He is survived by one son and a daughter.

The Rubber Trade in Massachusetts

Business is unmistakably better, and the slow but steady improvement is spreading into nearly every branch of the trade. The coming of the new year is confidently expected to prove a real turning point in industrial activity. Production in some lines is still subnormal, but factories are generally busier, more people are employed and sales continue to make encouraging progress.

This is a busy season in the rubber boot and shoe industry and most factories are operating on large tickets. Leather footwear production is increasing steadily and likewise sales, which are directly reflected in greater demand for rubber heels, soles, cement and shoe findings.

Tire plants are reported to be operating at about 70 per cent capacity, and while sales have been of considerable volume, due to a late autumn driving season, there has been a tendency during the past two months to over-produce. Motor vehicle production was considerably curtailed during the last quarter of the year, corresponding to decreased sales, but an upward swing in the retail trade is anticipated with the coming of the new year. The motor bus business is booming, motor vehicles replacing trolley cars throughout the country. This is creating a considerable demand for heavy duty tires.

The call for mechanical rubber goods continues to improve, heavy railroad buying being an important factor. Weatherproof clothing sales also are increasing and makers of druggists' sundries are seasonably busy. Insulated wire has not yet been much diminished by the winter weather, as building operations are still extensive.

The Devon Mills, Inc.

The Devon Mills, Inc., a recently organized Massachusetts corporation with a capital of 100 shares of no par common stock, has purchased and will operate the Rotch Mills, a tire yarn plant in New Bedford formerly belonging to the American Cotton Fabrics Co. It is understood that the purchase price was about $2,000,000. The Ninigret Co., a subsidiary of the Fisk Rubber Co., Chicopee Falls, and the Goodyear Tire & Rubber Co., Akron, Ohio, each has a one-half interest in the purchase and the plant will be operated for their joint account. This will enable the Ninigret Co. to supply to the Fisk company a greater portion of its tire fabric than heretofore and is expected to be of considerable advantage to both companies. As the plant has 60,000 spindles with a capacity of 10,000,000 pounds of fabric a year, the purchase also gives the Goodyear Tire & Rubber Co. greater independence in securing its fabric supply. L. S. Hall, superintendent of the

Goodyear textile mills at Los Angeles, California, will be acting superintendent at New Bedford, with H. M. Coulter, of Goodyear, Connecticut, as assistant treasurer in addition to his present duties.

The Firestone Cotton Mills

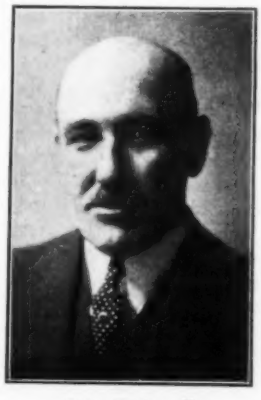
Practically all of the cotton fabrics used by the two Firestone plants at Akron, Ohio, the subsidiary tire factory in Canada, and the Firestone-Apsley Rubber Co. footwear plant at Hudson, Massachusetts, will hereafter be manufactured by the new subsidiary, the Firestone Cotton Mills, formerly the Sanford Mills, Fall River, Massachusetts. This plant, in the heart of the New England textile industry, is considered among the finest and best equipped in the country. The buildings were erected four years ago at a cost of $4,000,000, and are equipped with the most modern machinery.

New England's Place in Industry

The last United States Census of Manufactures shows that New England holds first place in the American production of thirty-six important lines of goods. This list includes rubber belting and hose, rubber boots and shoes, both of which industries are centered in Massachusetts, also suspenders, garters and elastic woven goods, the latter being chiefly a Connecticut industry. Cotton goods, in which Massachusetts leads, also finds a place in the list, and it must be remembered that this classification includes tire and many other fabrics used by the rubber trade. Even in the production of rubber tires and tubes Massachusetts stands second. No state nor group of states in the country comparable in area with New England can make such an excellent industrial showing.

Sales Manager of the Meade Rubber Sales Co.

John E. Lavelle has taken over the sales management of the Meade Rubber Sales Co., Stoughton, Massachusetts, a subsidiary of the Meade Rubber Co., and specializing on the light-weight, twenty-ounce patented "Gos-mer-ett" waterproof coat for men, women and children. The demand for this justly celebrated coat, now stocked by leading clothing and sporting goods houses throughout the country, has so increased during the short time it has been before the trade that it has been necessary to build, equip and maintain a special factory to meet the orders. The entire output of a separate tailoring establishment is engaged upon them.



John E. Lavelle

Mr. Lavelle was the founder and president of the Lavelle Rubber Co., Chicago, Illinois, and later was for many years sales manager for the John W. Wood Elastic Webbing Co., Stoughton, making his headquarters in Chicago. Under his management, and with the line of dependable merchandise distributed by the Meade Rubber Sales Co., a year of advancement for the firm is anticipated.

World's Rubber and Tropical Products Exposition

Mayor Curley, of Boston, is lending his support to the projected World's Rubber and Tropical Products Exposition which its sponsors propose to hold in Mechanics Building, Boston, from October 10 to 17, 1925. Not only has he joined the bureau of commercial and industrial affairs of the Boston Chamber of Commerce in requesting the Rubber Association of America to participate in the exposition, but he has offered an opportunity to the rubber trade to lay trial sections of rubber pavement on Huntington avenue, outside the building in which the exposition will be held.

Goodrich Broadcasts Musical Program

Station WEEI, Edison Light, Boston, is one of the seven powerful stations of the extensive broadcasting system of the American Telephone & Telegraph Co. chosen to broadcast a series of musical programs every Tuesday evening at ten o'clock by the Waldorf-Astoria Orchestra, New York, N. Y., for The B. F. Goodrich Rubber Co. The same program is also being broadcast through stations in New York, Washington, Providence, Buffalo, Philadelphia and Pittsburgh. F. T. Moore, manager of the Boston branch of the Goodrich company, is enthusiastic over the number of persons who report having heard and enjoyed the program, and believe this sort of publicity will prove valuable.

Railroad to Operate Motor Buses and Trucks

The Boston & Maine Transportation Co., with an authorized capital of $100,000, has been formed to own and operate motor vehicles for transportation of passengers, baggage, freight, mail, express, etc., in Massachusetts, Maine, New Hampshire, Vermont and New York.

J. H. Hustis, president of the Boston & Maine, states that the transportation company will operate in conjunction with the railroad. There is no intention of running buses or trucks in competition with steam trains. It is believed that there is a legitimate field for buses and trucks as an auxiliary to steam service on some transportation lines and in place of steam service on other lines.

New England Transportation Council Formed

Some 400 delegates attending the New England Motor Transport Conference, held at the Copley-Plaza Hotel, Boston, December 8 and 9, have organized a permanent committee representing railroads, trolley lines, motor truck and bus interests and the public, to be known as the New England Transportation Council. Its purpose is cooperation rather than unregulated, wasteful competition between rail, motor and water carriers, particularly with reference to motor vehicle and highway transport, which will make store door deliveries possible.

Massachusetts Notes

At the second regular meeting of the Forewomen's Council of Boston, M. D. Liming, manager of the bureau of industrial affairs of the Boston Chamber of Commerce, spoke on "Industrial New England." Miss Alice Grady gave the background of savings bank insurance and the theory on which it rests, outlining its numerous advantages over other forms of industrial insurance policies. The council would welcome representatives from concerns not now members. For particulars address Miss Marion Lee, American Rubber Co., Cambridge.

The steadily increasing tide of business in Massachusetts is shown by statistics of employment and earnings collected by the Massachusetts Department of Labor and Industries for the month of October, 1924. In three rubber footwear establishments, for example, 6,465 wage earners were employed, as compared with 6,239 in September. Of them, 4,607 were on full time and 1,808 on part time. In eight rubber goods establishments 2,817 wage earners were employed as compared with 2,642 in September. Of them, 2,760 were on full time and 57 on part time. Average weekly earnings for both sexes were $25.20 as compared with $24.71 in September. In three rubber tire and tube establishments 1,216 wage earners were employed as compared with 1,135 in September. Of them, 1,130 were on full time and 86 on part time.

A new building is being erected on Federal street, Worcester, Massachusetts, by the Brewer Tire Stores, Inc., 221 Commercial street, Worcester, the new construction to be completed some time during March. Branch establishments are also being maintained by the Brewer organization in Boston, Fall River, New Bedford, and Fitchburg, Massachusetts; in Portland, Maine; and Providence, Rhode Island. A. T. McGrath is general manager of the concern.

President of the Mohawk Rubber Co.

Stephen Samuel Miller, president of the Mohawk Rubber Co., Akron, Ohio, may rightly be considered as one of the pioneers in automobile tire manufacture. Beginning with solid carriage tires and pneumatics for bicycles, he was among the first to provide the necessary equipment for motor cars, and from that day to this he has closely followed the developments in the tire industry.

S. S. Miller

Mr. Miller was born in Norton Center, Summit County, Ohio, February 7, 1856, and has spent most of his life in the Buckeye state. He was educated in the Akron public schools, and on his graduation from high school in 1874 obtained employment with the Excelsior Reaper & Mower Works, where he quickly gained an intimate knowledge of the factory methods of that business. Two years later he went to Aultman Miller & Co., Buckeye Reaper & Mower Works, as foreman, where he remained twenty years and became an able factory executive.

His first connection with the rubber industry, which had attracted him greatly, was in 1896 when he became superintendent of the India Rubber Co., Akron, Ohio. Success in this position brought him two years later the factory superintendency of the Goodyear Tire & Rubber Co., and in 1900 that of the Kelly-Springfield Tire Co., in which latter position he remained twelve years.

In 1913 he went to the Mohawk Rubber Co. as factory manager and has been largely instrumental in the upbuilding of that firm's product and sales. Early last year he was named president of the company, following the resignation of R. M. Pilmore. Mr. Miller is a Mason and a member of the Akron City Club and Congress Lake Club.

The Rubber Trade in Ohio

Prospects for the rubber industry in Ohio during the next year are better than at any time within the past five years. In response to an increasing demand for tires and other products, nearly every rubber company is operating at capacity, and expansion programs have been launched by many companies.

Daily tire production in the Akron district is now estimated at 100,000 tires a day, compared with a schedule of 85,000 six weeks ago. Indications are that the daily tire output will reach 125,000 early in 1925, as a result of additional equipment being installed by many manufacturers and new factory buildings now under construction.

Akron rubber executives report that contracts already signed with motor car manufacturers call for considerably larger quantities of original tire equipment than were contracted for last year. While no material price changes have been made, it is understood that the tire companies next year will receive a slightly higher scale of prices from car makers. This applies especially to balloon tires, for which the demand has been steadily increasing.

A survey shows that practically every large automobile manufacturer has planned to use balloon tires for original equipment on the 1925 models. The production of balloon tires in this district is expected to be nearly double that of last year.

A Prosperous Year for Firestone

New equipment to be purchased by the Firestone Tire & Rubber Co., Akron, Ohio, will add 10,000 tires daily to its manufacturing capacity, making the maximum capacity 42,000 tires a day, according to President H. S. Firestone. The company is now producing approximately 30,000 tires a day.

The Firestone annual report shows net earnings of $8,116,689 for the fiscal year ended October 31, 1924, compared with $6,104,992 the year before. After providing for federal taxes and preferred dividends, net profits applicable to common stock were $17 a share. Sales were $85,610,004, against $77,583,149 in 1923. Bank indebtedness of $31,355,000 outstanding at the close of 1920 has been wiped out and $2,635,000 worth of preferred stock retired, it is announced. Current assets exceed liabilities almost three to one, with cash on hand of $4,445,366. The directors have authorized an increase in the common dividend from $4 to $6 a year. The quarterly disbursement of $1.50 is payable January 20, to stockholders of record January 10. Regular preferred dividends were also declared.

Mr. Firestone announced at the stockholders meeting that the company has established an organization on the West Coast of Africa, in Liberia, and that rubber now is being received from that country. This move is in line with his program that "Americans should produce their own rubber," he said. A prosperous year for the rubber industry in 1925 was predicted by the president.

Goodyear Establishes Record Tire Sales

On the basis of sales during the past eleven months G. M. Stadelman, president of the Goodyear Tire & Rubber Co., Akron, Ohio, states that Goodyear has sold more tires in 1924 than in any year of its history. Sales during the first six months of the year amounted to more than $55,000,000, which is expected to be exceeded in the last half year.

In a letter to dealers Mr. Stadelman points out that the great volume for replacement tires for automobiles does not come until the second year after the public's purchase of new cars. The year 1923 saw the biggest increase in car registration in the nation's history. Consequently, there is every reason to expect a substantial gain in tire buying in 1925.

Studebaker-Wulff Expansion Program

Sales by the Studebaker-Wulff Rubber Co., Marion, Ohio, continue to increase steadily. The combined daily production of the four plants is now 1,200 casings, 2,500 tubes, and 20,000 trouser belts. This output not sufficiently meeting the demand, an expansion program has been decided upon for the coming year, which will include a production of 2,000 casings, 5,000 tubes, 25,000 belts, and a number of rubber specialties.

On November 1 W. H. Bell became vice-president in charge of sales and also a director of the Studebaker-Wulff organization. Mr. Bell was for ten years associated with the Kelly-Springfield Tire Co., holding the office of assistant general sales manager, and later of sales manager.

Goodyear Zeppelin Corporation

In anticipation of future government and commercial requirements, plans for a five million cubic foot Zeppelin airship are being prepared for the Goodyear Zeppelin Corporation, a subsidiary of The Goodyear Tire & Rubber Co., Akron, Ohio. The proposed ship will be more than twice as large as either the "Los Angeles" (ZR-3) or the "Shenandoah" and in the judgment of Zeppelin engineers will have approximately four times the carrying capacity of the new ship acquired from Germany by the United States.

Officers recently elected by The Goodyear Zeppelin Corporation include: E. G. Wilmer, chairman; G. M. Stadelman, president; P. W. Litchfield, vice-president and general manager; Captain E. A. Lehmann and Dr. Karl Arnstein, vice-presidents; P. H. Hart, treasurer; C. A Stillman, secretary; and C. H. Brook, comptroller. Directors include the first four executives mentioned, and also Dr. Hugo Eckener, Harry Vissering, F. M. Harpham, William L. Fiske, and Robert C. Schaffner.

Ohio Notes

With all indications pointing to a substantial increase in business for 1925, the Goodyear Tire & Rubber Co., Akron, Ohio, has prepared plans for a new building which will house the complete engineering shops of the company. This new construction, which will be five stories high and 120 feet wide by 400 feet long, represents the first step toward relocating departments of the factory to secure greater operating efficiency and increase the production output of the plant.

Following the death of C. D. Darrah, president and general manager of The Ashland Tire & Rubber Co., Ashland, Ohio, E. L. Kilhefner was chosen as his successor, while E. C. Love was appointed factory manager. Executives of the organization state that prospects for the company are most encouraging and that increased production in the near future is contemplated.

S. F. Kahnheimer, of Kahnheimer Co., Akron, Ohio, is again affiliated with H. Muehlstein & Co., 42nd street and Madison avenue, New York, and is now in charge of the company's Akron branch.

E. L. Schmock has been appointed sales manager of The American Rubber & Tire Co., Akron, Ohio.

Daily production at the plant of The Cooper Corporation, Findlay, Ohio, includes 1,000 tires, 1,400 inner tubes, and 3,000 battery jars, while there is also said to be a good demand for the company's lines of hard rubber goods. C. P. Weaver heads the tire manufacturing division.

Excellent prospects for the future are reported by the Globe Sherardizing Co., 1259 West 78th street, Cleveland, Ohio, a company which makes a specialty of sherardizing circular and straight mandrels. John Kelly is president of the organization, and Edward Durkin is secretary and treasurer.

A considerable addition to the boiler house of the Falls Rubber Co., Cuyahoga Falls, Ohio, is being planned. M. J. O'Donnell is president.

The United States Rubber Reclaiming Co., 100 E. 42nd street, New York, N. Y., has recently appointed as its representative the Allied Consumers & Producers, Inc., 420 Metropolitan Building, Akron, Ohio, under the direct management of F. F. Dugan. Mr. Dugan's knowledge of the needs of the rubber industry fits him exceptionally well to extend reclaiming service to the manufacturers of the Akron district and the Midwest.

An extra dividend, either in the form of a cash disbursement or a special stock dividend to common stockholders, is expected to be made by directors of the General Tire & Rubber Co. at their annual meeting December 27. This company has paid preferred and common stock dividends since its inception and two years ago declared a 100 per cent stock dividend. Earnings this year are said to be better than last year, and sales of General tires have broken all records, according to officials. The company is now completing additions to the main factory which will increase its tire producing capacity by approximately 35 per cent.

Earnings of The B. F. Goodrich Co. are estimated at $9 a share on the common stock during the last six months of 1924. An early resumption of common dividends, which were passed in 1921, is anticipated by stockholders. Besides a large tire business, sales of rubber footwear this fall and winter have been better than ever before, Goodrich officials state. Demand for the "Zipper" boot, a new design brought out last year, is exceeding production, it is said. Goodrich is producing approximately 25,000 tires a day and nearly 30,000 pairs of rubber boots and shoes.

As a result of 9,000 additional square feet of floor space added to the Barberton, Ohio, factory, Guy Collette, president of the Lambert Tire & Rubber Co., manufacturer of "cushion puncture-proof tires," announces that tire production will be doubled by February 15. Installation of new machinery will be made during the holiday season, when the factory will be closed. Mr. Collette has just completed a 30,000-mile trip, visiting his jobbers, and he anticipates a large demand for tires next year. A new boiler house is also being added to the plant.

Announcement has been made of the purchase of the Vultex Rubber Co., Barberton, Ohio, by J. M. Wylie, and E. J. and C. C. Schultz. The new owners were associated with the Rubber Products Co. for about 20 years. A line of rubber sundries is to be manufactured by the new company, operations to be started about March 1, 1925. The Vultex factory has modern machinery and a reclaiming plant.

Operations will be started about January 1 at the plant of the Marathon Rubber Co., which was recently purchased by the Goodyear Tire & Rubber Co., according to officials of the latter company. The Marathon factory was first bought from W. H. Jenks, the receiver, by the Flex-Hyde Rubber Co. and later the name was changed to the Marathon Rubber Co., Inc., the patents and good will of which were purchased two months ago by Goodyear.

The India Tire & Rubber Co. Mogadore, Ohio, is preparing to increase its tire production from 1,100 to 1,400 tires a day. Additional buildings, which will provide the necessary room for expansion, are now being completed. As a result of large earnings this year, India directors have declared an extra dividend of $1, besides the regular $1 quarterly dividend on the common stock. The dividend is payable January 1, to holders of record December 20. Sales have increased 53 per cent over last year, officials state.

The B. F. Goodrich Co. has started an experiment in radio broadcasting, which may lead to the establishment here of a big broadcasting station. For the next two months arrangements have been made for the Silvertown orchestra to furnish programs through remote control to the principal seven radio stations in the country. The orchestra will play every Tuesday night between 10 and 11 o'clock.

The plant of the Seiberling Rubber Co., at New Castle, Pennsylvania, which has been closed for a year, will be reopened early in 1925, according to President F. A. Seiberling. This factory has a capacity of 3,500 automobile tires a day. Business this year will show a gain of nearly $3,000,000 over 1923, Seiberling officials say. A considerable amount of new machinery is being installed at the Barberton factory, which will permit a 50 per cent increase in capacity. It is anticipated that more back dividends on preferred stock will be cleared up at the meeting of directors of the company some time in January. Deferred dividends have been paid up to July, 1922.

A recent spectacular rise of the common stock of the Miller Rubber Co. to 108, up more than 25 points from last summer, is based on substantial earnings, according to officials. The factory is operating close to capacity, and 1924 earnings are expected to be between $30 and $35 a share on the common stock. As only $2 a share remains to be paid on deferred preferred stock dividends, it is regarded as almost certain that common dividends will be resumed early next year.

PROPOSED NEW RATES FOR SCRAP RUBBER SHIPMENTS

H. F. Masman, manager of the traffic department of the National Association of Waste Material Dealers, Inc., Times Building, New York, N. Y., announces that the Transcontinental Freight Bureau has docketed for consideration a request for the establishment of a 50-cent rate on scrap rubber tires, carloads from California points to Chicago, and a 65-cent rate to points east of Chicago, which rates are to expire 90 days after the date effective. Also under consideration is a request for a further reduction in the rates on scrap rubber from southeastern points to northern destinations.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" should be in the library of every progressive rubber man.

The Rubber Trade in the Midwest

A. J. Stephens Co. Reorganized

A. J. Stephens, who in 1916 established the A. J. Stephens Co., Kansas City, Missouri, has purchased a controlling interest in this organization which has been carrying on operations under the name of the Rubberstone Manufacturing Co. Associated with Mr. Stephens in the repurchase of the business is Mrs. Nellie E. Trego, of the Trego Radio Manufacturing Co. The new executives of the rubber organization are: A. J. Stephens, president and general manager; C. M. Buckner, vice-president; N. E. Trego, secretary and treasurer; and Benjamin T. Morgan, factory superintendent and production manager.

Operations at the Stephens plant are being increased, while the present annual output totals approximately 3,000,000 blowout patches, fan belts, inner tires, reliners, tire flaps, and other rubber goods, one item outside the automotive lines being the manufacture of 30,000 rubber reducing corsets for 1925 delivery.

Midwest Notes

The St. Louis, Missouri, branch offices of the Link-Belt Co., 910 South Michigan avenue, Chicago, Illinois, have been moved from their former location at 705 Olive street to larger and more conveniently located quarters at 3638 Olive street. It is believed that this removal to the manufacturing district will result in better service.

The St. Louis, Missouri, branch of the Kokomo Rubber Co. has been installed in larger quarters at 1424 North Broadway. The organization reports excellent prospects for the future. W. W. Napier is manager of the St. Louis division.

The Flynn-Guenther Rubber Co., which handles tires and tubes, has moved to larger quarters at Seventh and Charles streets, St. Joseph, Missouri. In recent months this organization has greatly extended its activities, and is now maintaining branch stores in several midwestern cities. A. A. Guenther is president.

The Badger Rubber Works, Milwaukee, Wisconsin, is putting out a line of tires marketed exclusively through jobbing houses, such tires being manufactured by the Federal Rubber Co., also of Milwaukee. B. H. Pratt is president and general manager of the Badger organization.

J. J. Roddy, formerly associated with the Firestone organization, and H. L. Alden, formerly president of the Minneapolis Rubber Co., have established The Roddy Tire Co., Inc., Third avenue and Grant street, Minneapolis, Minnesota. The new concern is handling Dunlop tires.

The Stafford Tire & Supply Co., North Robinson and Fifth streets, Oklahoma City, Oklahoma, is handling Firestone tires exclusively.

Automobile tires and accessories are being carried by The Guarantee Tire & Rubber Co., 211-213 South Illinois street, Indianapolis, Indiana, while branch establishments are also being maintained in Muncie, Marion, and Kokomo, Indiana.

Following a steady increase in business, the United States Auto Parts and Tire Co., jobber in automobile parts and tires, has moved to larger quarters at 853-859 Massachusetts avenue, Indianapolis, Indiana. E. W. Todd is general manager.

The Western Tire Co., 518 Kansas avenue, Topeka, Kansas, is the exclusive distributer in that city of Firestone casings.

The Haymond Tire Service, 140 West Midwest avenue, Casper, Wyoming, represents a new agency in that territory for handling Firestone passenger car and solid truck tires. Thomas W. Haymond is president.

Louis A. Bailey, Inc., distributer of Horseshoe tires and Re-Cord tubes, has recently moved his establishment to a more central location at 502 South Main street, Salt Lake City, Utah. This sales organization is successor to the Horseshoe Auto Tire Co., and also is a representative of the Wright Rubber Products Co.

H. A. Miller has been transferred to the general office service department of the Ajax Rubber Co., Inc., 218-222 West 57th street, New York, N. Y., making his headquarters at 730 Grand avenue, Kansas City, Missouri. His territory will include the States of Iowa, Nebraska, Kansas, Mississippi, Oklahoma, Texas, and Arkansas, and the city of New Orleans.

The Rubber Trade on the Pacific Coast

Prospects for 1925 look exceptionally good to practically all rubber manufacturers and representatives of eastern rubber concerns on the Pacific Coast. A steady demand in nearly every line is reported, money is much easier, collections have improved since the elections, unemployment is at a minimum, population is rising steadily, and dealers' stocks are known to be low in many important lines. Tire inventories are said by the larger distributers to be well reduced, not averaging much more than six weeks' supply for most dealers. Balloon casings are making further headway, but dealers are keeping well stocked with high pressure tires, doubting the likelihood of an early stampede for balloons. Distributers report a marked tendency on the part of dealers to concentrate on one make of tire, or on two at most, finding such a course more profitable to themselves and more agreeable to their customers.

Goodyear Declares Dividend

The directors of the Goodyear Tire & Rubber Co. of California, at Los Angeles, on December 16 declared the current quarterly dividend of 1¾ per cent on the 7 per cent preferred stock and also the same amount to cover one of the quarters in arrears. It was explained that the latter declaration involves no fixed policy and that hereafter the paying out of dividends in arrears will depend solely upon what may be warranted by the company's fiscal condition. John W. Mable was chosen as director to take the place of Lee A. Phillips.

The Goodyear company's Los Angeles plant is exceptionally busy, the spring dating orders having been even larger than the more sanguine executives had expected. The average daily production of tires has been 5,500, or about 1,000 a day greater than for mid-December, 1923; and tubes averaged 9,000 a day during the middle of the past month. A lively inquiry is reported for balloon tires and production is said to be keeping pace with demand. Tire repair material is in fair demand, although sales usually slow up in December.

Coast Tire & Rubber Co. Financed

Announcement to stockholders was made in December by the officials of the reorganized Coast Tire & Rubber Co., Oakland, California, that it had not only paid all creditors 100 cents on the dollar, but had also paid all federal, state, county, and city taxes, current and in arrears. President J. C. Hughes states that this has been accomplished by W. H. Weilbye, who put $100,000 into the treasury to enable the company to carry out its expansion program. Under the old organization a year's dividend required $261,000, but now the dividend for both first and second preferred stock will require but $33,500. A gross profit of $16,500 is reported for the past four months.

Pacific Coast Notes

Another considerable step in advance will be taken by the Samson Tire & Rubber Corporation, Compton, California, with the beginning of 1925. Tires and tubes will be sold east of the Rockies in competition with the big old-line companies; and to meet the new conditions the Compton plant's capacity is being doubled. Two one-story steel extensions are now being erected, one being 30 by 244 and the other 64 by 88 feet. The buildings and equipment will involve an outlay of about $100,000, according to Adolf Schleicher, president. This is the fourth expansion made by the company

in three years, each expansion practically doubling the concern's capacity.

Hull & Co., 2700-2704 American avenue, Long Beach, California, is the sole distributer of Goodyear mechanical rubber goods in the Los Angeles and Long Beach section. In addition, the Hull organization is the wholesale distributer for the Samson Tire & Rubber Corporation of Los Angeles.

The E. M. Smith Co., 637 S. Clarence street, Los Angeles, which has enjoyed considerable expansion in the past few years, is not only supplying a considerable part of the brake lining on the Coast, but also a very large amount of the rubber belting and the heavier suction and discharge hose, up to 2,000 pounds pressure, used in the oil industry. The factory is also turning out an increasing amount of radiator hose and various rubber automobile accessories. At the company's other factory at Downey, California, two shifts a day are kept busy turning out asbestos textiles and packing materials. E. M. Smith is head of the concern.

The Kelly-Springfield Tire Co. will maintain general offices and a distributing plant at Stevenson and Utah streets, Los Angeles, where it has just leased for a long term and a total rental of $32,000 some 15,000 square feet of space. Receiving and shipping will be facilitated with spurs from the Union Pacific tracks.

A much larger volume of mechanical rubber goods for 1924 than for the preceding year is the report of the Long-Turney Corporation, which has a moderate sized but well-equipped rubber manufacturing plant at 1920 East Vernon street, Los Angeles. Materials used especially by the building trades are in greatest demand.

Besides making a great variety of mechanical goods, the Eno Rubber Corporation, 1026 South Los Angeles street, Los Angeles, is executing large orders for various rubber devices and specialties for motion picture studios in the Hollywood section, having provided special facilities for such business, according to President Roy C. Musser.

An effort is being made to organize a tire men's division of the Los Angeles Automobile Trade Association to frustrate as far as possible the activities of the "gyps" and to bring about better conditions generally in the tire trade. George W. Bellis, manager of the Lee Tire & Rubber Co., and Wesley D. Smith, manager of the Keaton Tire & Rubber Co., are urging the tire men to get together and getting a consensus of dealers' opinions.

Thirty-five outside salesmen are now kept busy by J. B. Magee, manager of the United States Rubber Company's Southern California and Arizona branch, with headquarters at San Pedro and East 8th streets, Los Angeles. The staff at the latter place has been steadily increased during the year, and great improvement has been made at the same time in the displaying of goods, of which a heavy stock is carried constantly, the company's new building affording ample room for this purpose.

Over-plump ladies who have invested in costly rubber reducing corsets and have been distressed at seeing them rip and tear are assured that they need not despair. A repair man at 620 W. 9th street, Los Angeles, offers to make any "busted" rubber reducing garment practically as good as new for a very small honorarium.

The Goodyear Textile Mills in Los Angeles is also very busy, its workers now numbering 480, and the mills are now turning out tire fabric at the rate of 392,000 pounds a month. Since the textile mills were started scarcely five years ago the total production of fabrics has been somewhat over 15,000,000 pounds.

Manufacturers and dealers in rubber belting in the Southwest are much encouraged by the recent tests given special broad belting in one of the largest lemon packing establishments in California. A new sorting and packing belt system has reduced the cost of handling lemons so considerably, by replacing the old tray system and dispensing with numerous operatives, that it is quite certain the belting outfit will be generally adopted throughout the citrus growing region as standard equipment.

The daily output of the Spreckels Savage Tire Co., San Diego, California, is at present more than 1,000 tires and 1,500 inner tubes, while production plans call for the manufacture in four months time of 3,000 tires daily, and 10,000 inner tubes. Improved facilities and the installation of new machinery have made this development possible. E. F. Norton is general manager.

Eleven branch managers attended the reunion and conference of the United States Rubber Company's staff at San Francisco. The meet was under the direction of Pacific Coast Manager J. B. Brady and lasted three days. After the 1924 work had been reviewed and, incidentally, very substantial progress noted, extensive plans were made for 1925 operations. The final day of the meet was almost wholly devoted to social diversion. The managers present represented the eleven states west of the Rockies.

The Lewis Reed Co., 405 Oak street, Portland, Oregon, is carrying a complete stock of casings manufactured by the Sound Rubber Co., and is acting as the latter company's representative in the Oregon territory and the southern counties of Washington. The Reed organization is operating as a direct factory branch for the Sound company.

The Wiggins Co., Inc., Portland, Oregon, jobber and distributer of automotive equipment, reports much success in sales of Badger tires. E. R. Wiggins heads the organization.

The P. J. Cronin Co., Tenth and Flanders streets, Portland, Oregon, is operating as a wholesale distributer of tires, tubes, and automotive accessories. A. M. Cronin is president.

Lewis Wyman, treasurer of the Columbia Tire Co., Portland, Oregon, moved last month to Beverly Hills, near Los Angeles. With headquarters in the latter place he will seek to develop the sales of Columbia tires in the Southwest, and retain his position as treasurer.

The Kelly-Springfield Tire Co. has appointed Pierce E. Myers branch manager at Seattle, Washington. Mr. Myers returns to Seattle after seventeen years' absence, having been recently Kelly-Springfield branch manager in Los Angeles.

The Sound Rubber Co., 6,200 S. Union avenue, Tacoma, Washington, is running three shifts a day and turning out 1,500 tires and 2,500 tubes. The management has decided not to enlarge the plant at present, but will run night and day with present equipment. If business keeps up, however, it is probable that the plant will be extended considerably. S. A. Mudge has for a long time been secretary-treasurer.

John B. White, the new president of the Jack Tire & Rubber Co., Spokane, Washington, was formerly secretary-treasurer of the company. The factory is turning out 250 tires daily and about 400 tubes.

Hewitt tires are being handled on the Pacific Coast by the Hewitt Tire Sales Co., Port Angeles, Washington. H. B. Gerrard, who has recently become general manager of the distributing organization, was formerly connected with the Kelly-Springfield and Mohawk companies, while for the past two years he has been the representative of the Hewitt Rubber Co. in northwestern Washington.

The Fankell Tire Co., 124 West Fourteenth avenue, Denver, Colorado, is handling Seiberling casings exclusively, and has begun operations with thoroughly modern equipment. F. E. Fankell is president.

ACCORDING TO STATISTICS PREPARED BY *The Rubber Quarterly*, England, the world's rubber production has been estimated as follows: in 1919, 340,000 tons; 1920, 365,000 tons; 1921, 300,000 tons; 1922, 405,000 tons; 1923, 385,000 tons. Rubber consumption is represented as being: in 1919, 330,000 tons; 1920, 295,000 tons; 1921, 290,000 tons; 1922, 410,000 tons; and 1923, 425,000 tons.

The Rubber Trade in Canada

THE snow and cold weather of the last few weeks have made a good inroad on the retailers' stocks of rubber footwear and winter overshoes. Manufacturers of overshoes are indulging in a national advertising campaign, using the daily newspapers and trade mediums. The many outstanding features of their respective lines are being brought to the attention of the public in well illustrated copy. Various brands of rubbers are likewise being exploited in printers' ink which is being used in large sized copy, in the dailies, magazines, and other mediums.

Preparatory to launching a Dominion-wide campaign to educate investors to the advantages of winter construction, members of the Association of Canadian Building and Construction Industries will discuss the subject with members of the Engineering Institute of Canada during the conventions which will be held in Montreal at the end of January. Building on the Island of Montreal for 1925 promises a record season.

Rubber corsets are still in the limelight. The silk or cotton covered rubber material seems to be displacing the all rubber corset. A good inquiry has been noticeable for hot water bags which at this season of the year are in large demand.

Ryckman President Dunlop Tire & Rubber Goods Co.

The Board of Directors of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, recently elected E. B. Ryckman president of the company, succeeding the late Warren Y. Soper. J. Westren was elected vice-president and general manager, and A. E. King, secretary-treasurer. Mr. Ryckman has been associated with the rubber industry for a number of years. He organized the Dunlop Tire Co. in 1890 (the title was changed to Dunlop Tire & Rubber Goods Co., Ltd., in 1905) and has been vice-president for 25 years. J. Westren has been with the Dunlop Co. for the past 29 years, the last 25 of which he was general manager and secretary-treasurer. A. E. King was appointed assistant general manager in 1912.

Canadian Notes

On his return from Great Britain and Europe, the Kitchener officials of the Ames Holden Tire & Rubber Co., Ltd., tendered a banquet to W. B. Wiegand, vice-president and general manager, during which he spoke regarding his visits to rubber factories at Paris, Hanover, Birmingham, Leyland and Lancashire. Mr. Wiegand stated that in each country there was increasing application of research and scientific study, designed to minimize wastage both in material and labor and secure immunity from variation in product. In particular the application of machinery in all operations seemed uppermost in the minds of the management at each of the works, with resultant lowering of production costs.

The Velvet Rubber Co., Toronto, has been making good progress in the manufacture of rubber soles of the ready to apply type which are cemented to the outsole of the shoe. The soles are produced in six sizes suitable for men's, women's and children's footwear. Designs for rubber heels are at present being produced and it is the intention shortly to place Velvet heels on the market.

The Goodyear Tire & Rubber Co. of Canada, Ltd., Toronto, will remove the head office to the factory in New Toronto in January. A one-story extension will be added to the main building, which will house the office and garage. The company will maintain its warehouse in its Toronto building.

The Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario, is rapidly expanding the market and increasing production of Rhino rubber products. Lease has been taken of the Haines Bros. piano factory adjacent to the plant, which will be used as a warehouse and shipping office.

J. M. Newton, of the Kaufman Rubber Co., Ltd., Kitchener, Ontario, recently visited Western Canada. The company has opened a branch in the city of Quebec with L. Leullier as manager.

Gutta Percha & Rubber, Ltd., Toronto, has established agencies in all parts of the three Maritime Provinces.

The R. M. Beal Leather Co., Ltd., Lindsay, Ontario, has bought the plant of H. R. Rice & Co., Ltd., Niagara Falls, Ontario, and is moving the machinery to Lindsay, where the rubber top factory is being enlarged to accommodate it. The company expects to make four times as many leather tops for rubbers next year as they have in the past.

At a recent meeting of the Shoe Manufacturers Association of Canada, officers were elected for 1925. George Bergeron, Dominion Rubber System, Ltd., Montreal, was selected representative of rubber companies.

Dominion rubbers are being displayed to advantage in various centers, showing the crude rubber in various stages of manufacture up to the finished article.

A Joint Fire Prevention Committee has been organized in Canada, representing the Dominion Association of Fire Chiefs, the American Waterworks Association (Canadian Division), The National Fire Protection Association, and the Canadian Manufacturers' Association. The chairman of the new committee is W. H. Alderson, Gutta Percha & Rubber, Ltd., Toronto.

Payment of interest on the income bonds of Ames Holden Tire & Rubber Co., Ltd., will be commenced on January 2, 1925, the first distribution to be for the six months period ended December 31, 1924. It is understood that the demand for the company's products has been increasing, that economies have been effected in the manufacturing methods at the Kitchener plant, and that the affiliation with The B. F. Goodrich Co., Akron, Ohio, is considered a contributory factor in the company's success.

Many Canadian radio fans listened recently to a vocal recital by Miss Majorie Candee, daughter of C. N. Candee, president of Gutta Percha & Rubber, Ltd., Toronto. Miss Candee's singing was broadcast from New York City.

With increasing interest in winter sports hockey pucks are moving in good volume, according to local distributers. Present prices on pucks range from $12.25 per gross for the 2½ by ¾ juvenile, to $24.00 for the 3 by 1 Dunlop puck.

G. W. Charles, the new vice-president and general manager of the Dominion Rubber System, Ltd., Montreal, will devote his attention exclusively to the footwear end of the business.

W. H. Miner, of the Miner Rubber Co., Ltd., Granby, Quebec, is chairman of a committee to further the "Produce in Canada" Campaign of the Canadian Manufacturers' Association, in order that the manufacturers of the Province of Quebec may be able to better take advantage of displaying their products at the various exhibitions to be held throughout the Province during 1925.

January 17 is the opening date of the 1925 National Motor Show of Eastern Canada, to be held under the auspices of the Montreal Automobile Trade Association, Ltd. The show will take place in Henry Morgan's building on Phillips Square, Montreal, and promises to be a big event. The show will have a greater number of exhibitors than in past years, including the larger manufacturers of tires.

DURING THE YEAR 1923 FRENCH WEST AFRICA EXPORTED CRUDE rubber to the value of 4,287,754 francs, as compared with a corresponding total for 1922 of only 942,375 francs.

The Rubber Trade in Europe

Great Britain

STATISTICS of much significance as indicating almost universally a greater production of rubber goods by leading countries of the world are now being published. As a result, various authorities in the industry are pointing to the world's increasing consumption of crude rubber, and even suggesting the possibility of a shortage. *The Financial Times* comments on the annual report of one of the well-known rubber companies, and states that the chairman of this organization "echoed the firm belief of all the leading authorities in the industry when he claimed success for the Stevenson restriction scheme. His own opinion is that in the near future the world will require all the rubber which can be produced, and figures of consumption certainly support the conclusion. An examination of yearly totals of consumption since 1910 shows an average increase of 15.3 per cent over each preceding year, while for the five years ended December last the average expansion over the previous year was 9 per cent."

This opinion is shared by the *Rubber Age* (London), which says: "That restriction should ever have been necessary is a matter of profound regret, but that it was necessary for the sake of the manufacturer not less than of the planter only those with conveniently limited vision will attempt to gainsay. The world is consuming some 60,000 tons of rubber in excess of output, but if there had been no restriction the output would be 50,000 tons in excess of consumption and stocks would have gone up to a figure which must ultimately have meant irretrievable disaster."

Institution of the Rubber Industry

On November 17 a joint meeting was held at the Engineers' Club of the London sections of the Society of Chemical Industry and the Institution of the Rubber Industry. At this session Dr. Bernard Dyer, chairman of the first-mentioned organization, presided, while a paper was read by Dr. A. Van Rossem, director of the Government Rubber Laboratories, Delft, Holland, Dr Van Rossem's subject being "Latex: Its Chemistry and the Development of Its Industrial Applications." P. J. Burgess presided at the following session of the Institution, which was also held at the Engineers' Club, on the evening of December 1. A paper was read by Major B. J. Eaton, who took as his subject, "Research Work on the Plantation."

The annual dinner of the Manchester Section of the Institution of the Rubber Industry was held on the evening of December 5 at the Queen's Hotel, Manchester, J. H. Mandleberg, chairman of the section, presiding Sir Stanley Bois responded to the toast "The Institution of the Rubber Industry," proposed by Alexander Johnston, and Sir Alfred Ree replied to the toast "Our Guests," proposed by D. F. L. Zorn, vice-president of the Institution.

Institution's Diploma Scheme

In a recent issue of the *India-Rubber Journal* an explanation is given by Alexander Johnston, former president of the Institution of the Rubber Industry, regarding that organization's proposed scheme for awarding diplomas to those deserving them. Under this plan the diploma membership of the Institution is divided into two sections, open to men and women of British nationality, the two divisions to be known as Associates and Fellows. Following an explanation of the provisions of the plan, Mr. Johnston said:

"Briefly, the scheme provides a hall-mark for men of proved ability in the rubber industry, not only the professional scientist or the engineer engaged in the industry, but equally the non-scientific man whose knowledge has been gained entirely from actual factory experience. It provides for those who are already fully competent and as well for those who are preparing themselves to fill responsible positions. . . . The scheme has been conceived on broad common sense and practical lines, and there is little doubt that the diploma is likely to prove an asset of increasing value to the industry as a whole."

England's Increasing Exports of Rubber Goods

Statistics concerning Great Britain's growing exports of rubber goods show that exports of rubber manufactures were valued for 1923 at £6,735,352, as compared with corresponding figures for 1922 of £6,319,292, and for 1921, £5,941,932. In addition to tires, boots and shoes, hose, heels and soles, and miscellaneous rubber goods these shipments included rubber-proofed outer garments; belting other than leather, woven hair and cotton; and engine and boiler packing other than asbestos.

Another compilation prepared by the *India Rubber Journal* shows that Great Britain's exports of rubber goods during the first nine months of 1924 have increased in value as follows: Tires, £1,454,005, as compared with £1,162,955 for the January-September period of 1923; inner tubes, £288,669, 1924, and £212,364, 1923; rubber boots and shoes, £304,486, 1924, and £253,731, 1923; solid tires, £261,649, 1924, and £228,441, 1923; waterproofed apparel, £1,042,444, 1924, and £906,196, 1923; while exports of miscellaneous rubber goods rose for the 1924 period to £2,197,701, as compared with £2,077,313 for January-September, 1923. The total of the above exports for the nine months reached a value of £5,500,000. In the same time British imports of the principal lines of rubber goods amounted to a little less than £3,500,000, as compared with £3,889,146 in the same period of 1923, and £4,376,185 in the first nine months of 1922.

David Moseley & Sons Loses President

David Moseley, actively identified for over forty-three years with rubber manufacturing in all its phases, died on November 27 at his residence in Congleton, Cheshire, in the sixty-fourth year of his age. For more than twenty-six years Mr. Moseley had been honorary secretary of the India Rubber Thread Association, and was instrumental in establishing its successor, the India Rubber Manufacturers' Association, being elected also chairman of the latter enterprise in 1902 and again in 1909. Mr. Moseley was the eldest son of the late Joseph Moseley, and grandson of David Moseley, the founder of the well-known organization which is carrying on operations in Manchester.

British Imports of Rubber Balls and Footwear

Officials statistics estimate that imports of golf, tennis and other rubber balls into Great Britain have reached a considerable volume in recent years, as shown by the following values: 1920, £2,115; 1921, £85,824; 1922, £126,075; and 1923, £81,362. It is believed that these imports consist to a large extent of toy balls of various kinds, with a fair amount of tennis balls, while it is not considered likely that any large quantity of golf balls is imported into Great Britain. The leading sources of supply for these goods were: Germany, sending in 1920 shipments valued at £976; 1921, £19,173; 1922, £40,107; and 1923, £28,652; while Austria's exports of these commodities rose from only £20 in 1920 to £51,421 in 1921; £50,907 in 1922; and £25,378 in 1923. Supplies from other foreign countries totaled for 1920 £1,091; 1921, £15,045; 1922, £34,401; and 1923, £26,481.

Imports into Great Britain of rubber boots and shoes have during the last three years increased as follows: 1921, 62,600 dozen pairs, value £158,985; 1922, 112,308 dozen pairs, value, £237,924; and 1923, 148,708 dozen pairs, value £268,184. Although an advance is noted in the shipments from all countries except France, the United States is in the lead in these exportations, the totals being: 1921, 19,506 dozen pairs, value £61,913; 1922, 42,518 dozen pairs, value £110,438; and 1923, 67,172 dozen pairs, value £150,324. British imports of rubber heels and soles, in which trade the United States also outstrips other countries, are valued for the three years in question at £8,886, £11,439 and £11,295.

British Notes

The report of the India Rubber, Gutta Percha and Telegraph Works Co., Limited, 106 Cannon street, London, E.C.4, for the year ended August 31, 1924, shows a net profit of £101,317, which, added to the amount brought forward from last year, represents a total of £111,975. The company's reserve fund has been increased by £40,000, and a dividend of 5 per cent on the common stock has been declared. "Silvertown" rubber goods include sheeting, tubing, belting, hose, mats and matting, packing, gloves, etc.

The Sussex Rubber Co., Limited, has been capitalized at £15,000, and will carry on the business of manufacturer and agent for Barnett Etkind, 32 Houndsditch, E.1, and 61 Lionel street, Birmingham. The company specializes in rubber footwear and in gutta percha goods of all kinds.

Fussell's Rubber Co. has been organized for the purpose of producing certain improvements in the manufacture of rubber soles and heels, although the company's output will include tires and other rubber goods. H. J. and E. G. Fussell head the organization, which is maintaining offices at Knightsbridge, Worle, Weston-super-Mare.

The Colne Rubber & Sports Co., Church street, Colne, Lancastershire, has been organized by Robinson Hartley, and will carry on business as a wholesale and retail dealer in all classes of rubber and sports goods. Mr. Hartley has had more than twenty years of experience in the rubber industry.

Imports into Great Britain of rubber hose have increased from 261 tons in 1921 to 285 tons for 1922, and 421 tons for 1923, the value of the latter importation being £72,218. The United States, the chief source of supply, sent in 1921 253 tons, in 1922 254 tons, and in 1923 311 tons.

Although the value of rubber manufactured goods imported into British South Africa decreased from £901,791 in 1922 to £861,679 in 1923, the shipments from England of these commodities increased from £397,098 in 1922 to £411,236 in 1923; corresponding figures for the United States being £283,995 and £290,906, while Canada's figures for 1922 and 1923 respectively were £84,085 and £101,047. France and Germany, however, each lost ground during the past year, the value of imports from the former country decreasing from £97,604 to £31,219 in 1923, and from Germany from £25,124 to £22,245. Corresponding to the rubber manufacturing developments, particularly crêpe-soled footwear, the imports into South Africa of crude rubber totaled in 1923 59,682 pounds, value £4,199, this not including importations of sheet rubber valued at £23,071.

Germany

Despite the Dawes plan, decreases in certain taxes, and the gold mark basis, the German rubber industry is not out of the woods yet. The relief from lowering taxes will be short-lived unless followed by other tax decreases. The increasing cost of living has caused workers to demand higher wages and rubber factories have increased wages 10 per cent. Such a rise naturally nullifies the decrease in taxes. Then crude rubber prices have been steadily going up while prices for manufactured goods have remained at the same level, with a tendency to decrease in some instances.

Slashing of prices to meet competition is becoming rife, resulting in the steady narrowing of profits. Therefore the price decrease ordered by the Price Convention of German Surgical Hard and Soft Rubber Goods has been greeted with mixed feelings, although the desire of the convention was to help the poorer classes to acquire rubber goods necessary for hygienic purposes. With this end in view it sponsors a special hot water bottle, mark "Verdegul," which is said to be both cheap and durable.

The manufacturers of technical rubber goods have provided for increases of 10 to 20 per cent on the various types of goods. What the effect will be remains to be seen. Meanwhile it should be remembered that underselling is the order of the day.

In spite of all this underselling it is a disturbing fact that imports are growing while exports are dwindling. It has been calculated that imports have risen from a monthly average of 230 quintals during the first half of 1923 to a monthly average of 572 quintals in the corresponding period of 1924, while in September, 1924, the imports came to 1,030 quintals.

All these circumstances are causing uneasiness in certain circles and the need for reform in the rubber industry is being widely discussed. As a writer in a recent issue of the *Gummi-Zeitung* put it, the mutual distrust that is the most pronounced feature in the local industry is also the chief reason why no real cooperation can be brought about. "It is," he avers, "the best proof of the internal weakness of the industry. A strong organization is not suspicious; look at the American industry, which readily shows every foreign rubber man everything he desires to see."

Imports and Exports

Official statistics for the first nine months of 1924 show decreased exports in almost every line and increased imports in the majority. As to raw materials, rubber imports decreased from 158,668 quintals during January-September, 1923, to 155,835 quintals in the same period of 1924.

However, as re-exports were larger by about 3,000 quintals in 1923, the German consumption of crude rubber remained about the same. Gutta percha likewise decreased from 1,852 to 1,164 quintals, but balata showed an increase from 1,024 quintals to 2,206 quintals.

In manufactured goods, imports of rubber thread rose from 294 to 555 quintals and exports fell from 879 to 778 quintals. Imports of tubes for motor vehicles increased from 154 to 5,220 quintals (most of the latter being returned goods), but exports were 139,261 instead of 176,464 quintals. Similarly, the figures for imports of bicycle tubes read: 13,066 quintals against 3,903 in 1923, while exports come to 2,274,713 instead of 2,765,347 quintals.

The same thing is noted in all kinds of tires, total imports of which were 17,211 quintals against 5,537 quintals in 1923, while exports were 1,289,310 quintals instead of 1,968,806 quintals. Great Britain, Argentina, Holland, were among the best customers for tires. Belting, hose, and packing show exports of 15,078 quintals in 1924 against 19,663 quintals in 1923. Rubber footwear fell from 2,669 quintals to 1,731 quintals.

Other rubber goods were 45,531 and 48,799 quintals in 1924 and 1923 respectively. Hard rubber rods, tubes, sheets, were among the few items that increased, the figures being 2,130 quintals instead of 1,475 quintals; but other hard rubber goods went down from 5,945 to 4,688 quintals.

Rubber in Zeppelins

Although some months have passed since the airship ZR-3 successfully made the trip from Germany to America, technical papers still discuss it from time to time. Thus the *Gummi-Zeitung* points out, among other things, the various parts and accessories that are made of rubber.

Besides the rubberized cloth and usual rubber technical parts, the Zeppelin has rubber ropes, and special rubber mail bags besides

the regulation bags of linen or bagging. The panes of the windows are set in U-shaped fittings and similar packing is attached to the communicating doors.

There was also a quantity of rubber solution and rubberized balloon cloth on board to be used in case of rents occurring in the cover. In fact, such a tear was noticed in the cover and repaired before it became dangerous. Rubber gloves and shoes are used by electricians, and parts of the machine boats are furnished with hard rubber as this material had to serve certain insulating purposes and at the same time is lighter than porcelain.

Rubber in German Rotor Ship

The Flettner Rotor ship, as it is known here, is the subject of universal interest and it is noted that the huge rotating towers which form the predominating feature of the Flettner ship and by means of which the boat is brought in motion, are lined with rubber. As each vessel has two of these towers, which are 20 meters high and have a diameter of 3 meters, the rubber industry would probably benefit if this type of boat came into use on a large scale.

German Notes

Gradually the leading German firms are putting their affairs on a gold-mark basis. Among the latest firms to do so are:

Kölnische Gummifädenfabrik, vormals Ferd. Kohlstadt & Co., Köln-Deutz, which has brought its capital from 13,500,000 paper marks to 1,125,000 gold marks. This compares with 1,080,000 gold marks and a legal reserve of 185,000 gold marks on December 31, 1914.

Deutsche Kabelwerke A.-G., Berlin-Lichtenberg, which reduced its capital of 250,000,000 marks to 5 million gold marks in original shares and 160,000 marks in preferential shares. The reserve fund amounts to 516,000 gold marks. In 1914 the capital was 5,250,000 gold marks, with reserve fund of 645,000 marks.

Vereinigte Berlin-Frankfurter Gummiwarenfabriken, whose capital is now 1,325,000 gold marks instead of 35,000,000 paper marks.

C. Müller, Gummiwarenfabrik, A.-G., whose capital of 9 million paper marks was brought to 900,000 Rentenmark and then raised to 1,100,000 Rentenmark.

Mittelland Gummiwerke, A.-G., Hannover-Linden, whose total capital now is 2,025,000 gold marks against 125 million paper marks. In 1914 the capital was made up of 841,000 shares and 477,000 debentures.

Italy

Italian imports of crude and manufactured rubber during the first half of 1924 show an increase over those for the same period of 1923. Crude rubber imports were 4,935 metric tons against 3,955 tons; reclaim dropped from 26 metric tons during the first half of 1923 to 15 this year and scrap rubber from 300 to 181 metric tons, while gutta percha shipments increased from 41 to 164 metric tons. The value of crude rubber this year was 53,927,441 lire, and of gutta percha 6,112,684 lire.

The largest item of imports, pneumatic tires and tubes, fell from 721 metric tons, value 18,324,426 lire, to 700 metric tons, value 16,719,585 lire. While imports from France increased from 284 to 402 tons, those from the other supplying countries showed a decline as follows: Great Britain, from 185 to 146 metric tons; America, from 134 to 54 tons; Germany, from 68 to 39 tons.

Two American tires and one British tire are now well-known to Italian consumers. The price policy of Michelin and Pirelli, who control the local tire market, tends to restrict sales of the American and British article in Italy.

The total amount of other rubber goods bought by Italy during January-June, 1924, rose to 508 tons from 346 tons in 1923. Germany supplied the largest quantity of goods, 211 metric tons; Austria, France, America and Great Britain also shared in this business, increases being shown for all the countries except Great Britain. These articles included solid tires, 156 metric tons; rubberized fabrics, 99 tons; belting and hose, 64 tons; rubber thread, 19 tons, and manufactures of elastic webbing, 42 metric tons.

While imports of pneumatic tires and tubes show a tendency to drop, exports are rapidly growing. In 1922, exports were valued at 53,142,998 lire; in 1923, 52,839,314 lire; and in 1924, 86,955,145 lire. The last value is more than five-fold that of tire and tube imports. The quantity of tubes and casings exported in 1924 totalled 3,220 metric tons, of which 351 tons went to England, 326 tons to Spain, and 319 tons to Belgium. Exports for 1923 were 2,330 metric tons.

The exports to England fell over 75 per cent. as compared with 1923, but the difference was made up by the increases to other countries, notably Spain and Belgium. It seems that Pirelli is concentrating on the European markets in respect of solid tires. The increased shipments of pneumatic tires from Italy are said to be due to Michelin's policy of supplying export markets increasingly from the Turin plant, while building up the balloon tire production in France.

Exports of other manufactures besides tires totaled 398 metric tons against 386 tons in 1923; these included: rubber thread, 60 tons; tubing and hose, 30 tons; rubberized fabrics, 21 tons; articles of elastic webbing, 48 tons; hard rubber goods, 24 metric tons.

Italian producers offer more competition in tires than in other articles and apparently Americans know this, as their attention is more and more given to articles other than tires for exporting to Europe.

International Fair

From January 22 to 29, 1925, an International Fair for the leather industry will be held in the Palazzo delle Belle Arti, via Principe Umberto 32, Milan. Among the different groups represented will be one for all kinds of footwear, besides others including rubber heels and soles, machinery and accessories, as well as chemicals for the leather industry.

Those desiring further information are requested to address the General Management, via Principe Amedeo 3, Milan (12), Italy.

DANISH COMPANY CEASES OPERATIONS

Albert Theilgaard, Axelborg, Copenhagen B., Denmark, has during the last few years been manufacturing a good grade of rubber footwear, the production at the company's plant rising from 35,000 pairs the first season to 127,000 pairs during the second. However, on account of the dumping policy of certain German organizations the Danish company, which had been finding its market in Denmark, Sweden and Russia, was compelled on February 1, 1924, to cease operations. It is believed that American manufacturers of rubber footwear would find excellent opportunities for the sale of their goods in the countries mentioned, provided that the output conformed to Scandinavian and Russian styles.

BRITISH GUIANA BALATA EXPORTS

Exports from British Guiana of balata totaled in 1913 1,323,609 pounds, value $768,463. In 1922 the volume had declined to 912,320 pounds, value $590,487, rising however in 1923 to 1,039,086 pounds, value $635,192. These 1923 exports were shipped to the following countries: United Kingdom, goods valued at $615,946; the Netherlands, $766; Canada, $360; and the United States, $18,120. Imports into British Guiana of india rubber and gutta percha goods from the United States were valued in 1922 at $23,050, and in 1923 at $16,978.

THROUGHOUT THE PRESENT YEAR ENGLAND HAS CONTINUED TO lead other countries in imports of American-made solid tires, the figure for the first ten months of 1924 being $729,759, as compared with only $188,146, the total for the entire year 1922. The value of the January purchase alone stood at $144,783.

The Rubber Trade in the Far East

Malaya

It is many months since Malayans were quite as enthusiastic over restriction as they are now. With prices going up, stocks diminishing rapidly, strong American buying, and activity in the share market, faith in the Stevenson plan is stronger than ever before.

People feel that at last rubber may really be said to be safe, for despite all kinds of propaganda and notwithstanding huge Dutch outputs, prices are up and stocks are down. Scarcity of rubber to meet increasing demands and a rubber boom are predicted, so that people who were glad to make forward contracts at 1*s* 2*d* or thereabouts are walking about with serious faces.

The Results of Restriction

The *Straits Times* in reviewing the results of restriction recalls that the result of the first year was a gain of $84,537,991, while prices averaged 52½ cents in Singapore. The showing for the second year is not so good owing to the decline during February-October, 1924, but despite this the price averaged around 45 cents as against 25 cents in July-September, 1922, and the gain to Malaya will still be in the neighborhood of $50,000,000 for the period November, 1, 1923-October 31, 1924. The paper considers that the time has now come to take up new planting again.

Now that fears of disaster for rubber seem to have disappeared and the future holds out fair promises, local planters are settling down to take stock of themselves and their position with regard to producers outside the British Empire. One thing that restriction appears to have made clear is that in the Dutch the British have greater competitors than they knew. It was always considered that the Dutch produced about 25 per cent of the world's output, but they apparently can do much better. Then the potentialities of the native producers have been revealed to be such that they can no longer be ignored. While Malaya is still first among rubber countries, her advantage has diminished. The realization of this change in Malaya's dominion over rubber has accentuated local feeling, already sharpened by the attitude on restriction, towards the principal competitors, the Dutch. In some circles it is openly said that when restriction is finally raised, then will come the real tug-of-war between the two competitors.

Such being the case, the news that the Secretary of State for Colonies has approved the recommendations for the establishment of a Rubber Research Institute for Malaya has been received with general satisfaction. This Institute will be the first of its kind in Malaya and great things are expected of it. For one thing it must put Malaya ahead of the Dutch in scientific matters and then it must take up propaganda. This is the opinion expressed here.

Recent Restriction Rules

For the quarter of November 1, 1924, to January 31, 1925, the exportable quantity will be 50 per cent. This is the first time since restriction was introduced that the allowance has been placed at this low percentage. At present the price is a little below 1*s* 6*d*. Had this price been reached somewhat sooner there would not have been a further reduction. However, if prices keep up, and it it locally felt that they will, the allowance will not stay at 50 per cent for more than one quarter.

With the beginning of the third year, the standard allowances on which restriction is based will be modified to the extent that estates planted in 1919 which were permitted to produce 60 pounds an acre in 1924 will be allowed 180 pounds, while areas planted up in 1920 will now be able to harvest 60 pounds an acre.

Malayan Statistics

Exports of rubber from Malaya totaled 213,012.04 tons during the year ended October 31, 1924, against 208,971.92 tons in 1923, showing an increase of 19,283.44 tons. However, this increase was brought about by the greater imports of rubber amounting to 86,005.18 tons in 1924 against 53,198.79 tons in 1923. The value of the total exports fell from $236,936,000 in 1923 to $206,887,000 in 1924, which clearly illustrates the break in prices which took place after February, 1924.

Latex shipments have been very variable. Whereas in 1923 latex to the value of £13,908 was exported, practically no export took place in the first three months of 1924. Then suddenly there was such renewed activity that by July, 1924, latex to the value of £52,360 had been exported; that is, in four months of 1924 almost four times as much latex was exported as in the entire year of 1923. This was due to purchases by America, for while in 1923 somewhat less than a third of the exports, or £3,955, went to America, the 1924 shipments to this country were valued at £52,001, which is almost the whole amount.

Restriction statistics supplied by the Controller of Rubber Exports were as follows:

	Total Exports British Malaya	Total Exports Restriction Area	Total Imports Foreign Rubber
	Tons	Tons	Tons
1924			
March	22,294	14,020	8,269
April	20,551	10,759	7,909
May	19,674	13,597	7,259
June	18,084	13,370	7,435
July	21,670	13,780	9,777
August	22,133	16,989	9,777
September	25,127	14,235	9,291
Totals	149,533	96,750	59,717

Dealers' Stock

	1924						
	March	April	May	June	July	August	September
Singapore..	18,950	16,954	16,279	13,902	16,901	17,393	16,648
Penang....	2,538	2,121	1,700	2,057	2,621	3,157	3,211
	21,488	19,075	17,979	15,959	19,522	20,550	19,859

Rubber from Restriction Area on Which Export Duty Was Paid

	1924						
	March	April	May	June	July	August	September
Federated Malay States	8,589	5,869	7,916	7,549	7,862	9,585	8,491
Straits Settlements	1,718	1,324	1,583	1,642	1,705	2,081	1,783
Johore.....	2,514	2,331	2,895	2,829	2,789	3,512	2,394
Kedah.....	880	697	974	1,010	988	1,419	1,162
Kelantan....	265	276	236	270	250	313	307
Trengganu.	54	62	83	70	86	79	98
	14,020	10,759	13,597	13,370	13,780	16,989	14,235

Stock afloat in harbor, September rubber declared in October, 452 tons. All figures are in tons. The imports of foreign rubber are gross weights. No allowance has been made for moisture in lower grade rubber.

Ceylon

Statistics

According to statistics supplied by the Rubber Controller for Ceylon, shipments of rubber for the second year of restriction, from November 1, 1923, to October 31, 1924, totaled 40,019 tons, of which 37,194 tons was Ceylon produced rubber, 2,799 tons imported rubber and 26 tons salvaged rubber. The quantity of latex exported was insignificant, amounting to only 132 gallons. During the period November 1, 1922, to October 31, 1923, the colony exported 40,145 tons comprising 37,846 tons of locally grown rubber and 2,299 of imported rubber. The latex shipments were 13,207⅔ gallons.

For the month of October, 1924, shipments of Ceylon produced rubber amounted to 3,503 tons and of imported rubber, 279 tons. No latex was exported in that month.

Attitude on Restriction

The question of rubber restriction is about to be taken up by the legislative council and discussions on the subject here will be followed with the greatest interest. Meanwhile, in advance of official consideration, pens are once more brought into action over the problem and various opinions aired. One anti-restrictionist in putting forth the usual argument about the survival of the fittest says that in place of natural permanent elimination of the unfit, restriction has brought about temporary elimination of 40 per cent of all, fit and unfit. By this, too, cultivation is discouraged in the restricting territories and with continued restriction and at the same time a steady demand for rubber, foreign expansion, particularly of the Dutch, would increase to the detriment of the position of Malaya and Ceylon as producers of rubber. Restriction has strengthened outside competition not only in the Dutch colonies but probably in South America, the Congo, and other countries.

On the other hand, the stronger market has bolstered up faith in restriction and it is asked whether it is wise to abandon the scheme just when producers are about to reap the rewards for their sacrifices. It is believed that there are indications of a rubber shortage if the scheme will only be persisted in, and full production early in 1926 with a price of over 1*s* 6*d* is predicted. Another point made is that the value of rubber lands has increased considerably since restriction.

Native Rubber

Native rubber was the subject of discussion of a meeting of the Rubber Producers Association at Batavia on October 9, at which R. C. M. Kindersley and T. J. Cumming represented Malayan planters.

It will be remembered that on February 21, 1924, a conference was held at Djocja to discuss the same problem. At that time the Malayan delegates were Messrs. Ritchie and Bannon and it had been decided that an investigation should be instituted as promptly as possible with a view to ascertaining the extent and possibilities of native planting in the Netherlands East Indies.

As a result of this, Dr. N. R. Pekelharing of Buitenzorg, appointed by the Director of Agriculture, and T. J. Cumming of Seafield Estate, Batu Tiga, Federated Malay States, visited Djambi in Sumatra in July and August, 1924, in order to get first hand information, as far as it went, of conditions in the rubber industry there and to see whether a plan for counting the trees or measuring the planted area could be worked out by touring Djambi, Palembang, Indragiri, South and West Borneo, etc.

Both gentlemen returned recently, Mr. Pekelharing unfortunately in a sick condition. At the meeting of October 9, the conclusions of Mr. Cumming, with which Dr. Pekelharing concurs, were considered.

Mr. Cumming's opinion regarding the possibility of measuring areas or counting trees was that owing to the lack of proper roads, railway facilities and registration of land, such a task would consume about 5 years and would cost large sums of money and was therefore impracticable. But the system in vogue for the purpose of levying income tax could be used as a basis for determining the present state of the native rubber industry.

According to his plan a tour of Djambi would take three months. Two men would be required for this purpose, one a government official to keep in contact with the government of the interior, and the other a practical planter. The cost per month would be 3,000 guilders, or 36,000 guilders for one year, this period being considered sufficient for Djambi, Palembang, Borneo and Riouw. A permanent committee of three, centered at Batavia, would be responsible for the program and expenditures. To this committee should be added an official in each of the districts who would inspect the rubber exports.

The chairman, after reading these conclusions, stated that the Rubber Producers Association had the money at its disposal, but that the estimate of expenses had been raised to 50,000 guilders. It would not be easy to get experienced planters for this purpose, but Mr. Kindersley had promised that in case of need the Federated Malay States would give help. He also said that nothing could be undertaken until Dr. Pekelharing had recovered.

Djambi Rubber

Now that attention has been focused on native rubber, it may be said that practically every issue of one or other of the local papers brings more or less well authenticated information on the subject, obviously colored by the personal feelings of the writer.

One view that aims to throw light on the effect of price on native output is novel if nothing else. It amounts to this: that the higher prices go the less rubber the native will produce, because he is naturally lazy and unambitious and will only work enough to cover his needs. With low prices he must work hard in order to provide for himself and family, and so his output increases; while with high prices he can follow his ideal and do as little as possible, which of course is reflected in decreased production!

The information given by a writer quoted in the *Nederlandsch-Indisch Rubber-en Thee-Tijdschrift* of October 15, 1924, is worthy of consideration. Among other things he claims that the export figures for Djambi are supplied by uncontrolled Chinese exporters.

The need of a survey of the native plantation is emphasized and the writer adds that the production would have been much higher if the native had been different. A considerable portion of the plantings, at least 30 per cent, is not tapped, because of lack of coolies. On the other hand the plantings will be greatly extended this year. It is estimated that in this section alone, expansion will amount to 2,500,000 trees!

The lack of tappers will probably not long continue, comments the paper, as the high wages (amounting to 2 guilders a day it has been learned from various sources) are so extraordinary that Japanese coolies have already been attracted by them, several being now employed by Djambi native owners, and it may be expected that coolies from other parts too will be drawn to Sumatra. In this connection it is questioned whether the government may permit the existence of a condition whereby natives, owing to entirely disproportionate taxation, are able to pay 100 per cent more in wages than a European concern can pay without going under. Why may the practically untaxed native freely import labor without having to fulfill any of the many obligations imposed on the strictly controlled and heavily taxed European employers?

The unknown writer of the article further calculates the profits of the Djambi native, which according to him come to 800-1000 per cent annually after six years; in plain figures 1,000 to 1,500 guilders a year ($400 to $600). Out of these enormous profits the government gets only 4 per cent of the export value.

The final remarks of the paper quoted come to this: that although in time science will enable Europeans to keep native competition within bounds if not to suppress it altogether, this may take years and by then the flourishing rubber industry may have become a forest industry such as the Brazilian rubber industry. Therefore it is necessary that the government intervene in time and give the Europeans a fair chance.

Netherlands Notes

The *Nederlandsch-Indisch Rubber-en Thee-Tijdschrift* is about to be reorganized.

On January 1, 1925, the new paper to be known as *De Indische Culturen*, with subtitle *Teysmannia* will appear and in it will be taken up the tenth volume of the *Nederlandsch-Indisch Rubber-en Thee-Tijdschrift*. The new publication will, as its title implies, take up all crops in these parts instead of treating exclusively of tea and rubber, as has hitherto been the case.

Recent Patents Relating to Rubber

The United States

Issued* November 18, 1924

1,515,702 Rubber pump diaphragm with layers of thread fabric. E. C. Reybold, Denver, Colorado, assignor to The Dorr Co., a corporation of Delaware.

1,515,716 Rubber block suspension for automobiles. W. L. Adams, assignor to Adams Motors Corporation, both of New Haven, Connecticut.

1,515,786 Noise-making elastic toy. H. W. Munro, Providence, Rhode Island.

1,515,910 Brake band. A. H. Sweet, assignor by direct and mesne assignments to Title Guarantee & Trust Co., both of Los Angeles, California.

1,515,956 Brake band. G. R. Le Maire, Central City, Kentucky.

1,515,980 Rubber impregnated shoe laces, etc. C. B. Walrond, Auckland New Zealand.

1,516,030 Pneumatic tube and method of making it. E. W. Thurlow, Brighton, assignor of one-half to Wilfrid K. Hughes, both in Melbourne, Victoria, Australia.

1,516,380 Bathing cap. G. Eaton, New York, N. Y.

1,516,465 Shoe with elastic heel grip. T. Dennison and David Kernohan, Belfast, Ireland.

Issued* November 25, 1924

1,516,647 Illuminating attachment for pencils, having a body of rubber. J. W. Saunders, Pocatello, Idaho.

1,517,022 Baseball with vulcanized rubber shell. T. S. Shibe, Philadelphia, Pennsylvania.

1,517,171 Pneumatic insole for shoes. M. Rosenwasser, New York, N. Y.

1,517,239 Solid rubber tire. A. F. Masury and A. H. Leipert, New York, N. Y.

Issued* December 2, 1924

1,517,378 Transparent cap for pneumatic tire stem pressure gage, C. C. Neal, Marmet, assignor by mesne assignments, to Tiregage Valve Corporation, Charleston, both in West Virginia.

1,517,469 Inflatable head-supporting bathing appliance. H. L. Smith, Paterson, New Jersey.

1,517,484 Pressure gage for pneumatic tires. A. Badowski, assignor to Tirometer Valve Corporation of America, both of Charleston, West Virginia.

1,517,485 Tire stem pressure gage. A. Badowski, assignor to Tirometer Valve Corporation of America, both of Charleston, West Virginia.

1,517,486 Transparent cap for tire stem-pressure gage. A. Badowski, assignor to Tirometer Valve Corporation of America, both of Charleston, West Virginia.

1,517,514 Golf ball. J. Hunt, Chicago, Illinois.

1,517,610 Resilient insert for shoes. C. A. Bayless assignor of one-half to W. H. Gerdes, both of Dayton, Ohio.

1,517,703 Rubber garter. S. Byer, New York, N. Y.

1,517,745 Inflatable rubber mattress as life saving device. H. Morley, Sale, near Manchester, England.

1,518,073 Rubber heel. W. Kaplan, Paterson, New Jersey.

Issued* December 9, 1924

1,518,448 Football. G. L. Pierce, Brooklyn, assignor to A. G. Spalding & Bros., both in New York, N. Y.

1,518,466 Tire boot. D. E. Stevenson, Indianapolis, Indiana.

1,518,529 Tire. E. Linderme, Cleveland Heights, Ohio.

1,518,746 Cushion tire. F. H. Meyer, Warren, Ohio.

1,518,798 Elastic fabric. T. F. Kendrick, Philadelphia, Pennsylvania.

1,518,823 Combination nipple and pacifier. H. A. Schmidt and W. E. K. Schossow, Milwaukee, Wisconsin.

1,518,897 Cry-producing device for toys. E. W. Bruckner and H. B. Bruckner, both of Jersey City, New Jersey.

1,518,901 Valve plug for inflated bodies. C. F. Collins, and F. J. Mayer, both of Woodhaven, New York.

1,518,911 Combination soft and stiff rubber sole and heel. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,519,009 Removable sponge rubber insole for shoes. J. J. Reina, assignor of one-half to R. F. Welch, both of New York, N. Y.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted November 18, 1924

244,443 Fluid-filled air tube. F. A. Regondi and I. Regondi, co-inventors, both of Milano, Italy.

244,444 Quoit with rubber core. W. F. Scotson, Mosman, near Sydney, and S. L. Elphick, of Sydney, co-inventors, both of New South Wales, Australia.

244,480 Pneumatic tire and wheel. T. Elliott, Stabane, County Tyrone, Ireland.

244,491 Rubber darning egg. B. M. Gingles, Waukesha, Wisconsin, U. S. A.

244,600 Flexible coupling. The B. F. Goodrich Co., New York, N. Y., assignee of G. F. Wilson, Akron, Ohio, both in U. S. A.

244,616 Rubber glove. The Plantation Rubber Manufacturing Co., Ltd., assignee of G. F. Underwood, both of London, and W. Luffsmith, Brighton, Sussex, all in England.

Granted November 25, 1924

244,710 Porous rubber press roll. C. R. Griffith, Portland, Oregon, U. S. A.

244,836 Tire casing. F. L. La Tulip, Los Angeles, and William D. Nicholson, Long Beach, assignee of one-half interest, both in California, U. S. A.

244,837 Blowout patch. A. O. Lambert and R. C. Lambert, assignee of one-half, both of Toronto, Ontario, Canada.

Granted December 2, 1924

244,854 Pneumatic tire. J. H. C. Boig, Syracuse, New York, U. S. A., and W. Seward, Montreal, Quebec, Canada, co-inventors.

244,865 Attachment for the valve stems of plural tires. W. H. Brown, Pasadena, California, U. S. A.

244,900 Teat cup with flexible lining. H. McCormack, Glen Ridge, New Jersey, U. S. A.

Granted December 9, 1924

245,020 Quilted waterproof pad. S. Cohen and S. Kilberg, both of New York, N. Y., U. S. A.

245,025 Sanitary urinal for infants. L. G. Ajamian and Y. E. Ajamian, both of West Hoboken, New Jersey, U. S. A.

245,061 Self-healing inner tube. W. Fetter, Baltimore, Maryland, U. S. A.

245,091 Blowout protector for pneumatic tires. A. C. Lifquist, Wadena, Minnesota, U. S. A.

245,125 Swimming device. J. Weiss, Pompton Plains, New Jersey, U. S. A.

The United Kingdom

Published November 5, 1924

221,498 Inflation valve for footballs. J. Geelhoed, 147 Scheveningsche Laan, Loosduinen, Holland.

221,506 Bathing cap. L. Auster and M. Auster, New York, N. Y.

221,536 Mounts for lenses, employing raw rubber strips. G. Culver, Ltd., and E. Culver, White Lion street, Pentonville, London.

221,537 Inner tube. T. B. McLeroth, (Tubes) Ltd., 6 Lincoln's Inn Fields, London. (T. B. McLeroth, 1940 East 6th street, Cleveland, Ohio.)

221,568 Exercising apparatus employing rubber blocks. J. Hubert, 132 Harbottle street, Byker, Newcastle-on-Tyne.

221,596 Idler pulley with rubber tread. G. T. Andrews, Meyer & Charlton Geld Mine, Jeppestown, Johannesburg, South Africa.

221,631 Sock garter. A. J. Wuertz-Field, 59 Windmill Hill, Enfield, Middlesex.

221,694 Inflatable cushion. F. S. Farrell and C. Macintosh & Co., Ltd., Cambridge street, Manchester.

221,696 Cushion tire. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and F. Fellowes, Erdington, Birmingham.

221,703 Massaging instrument with rubber disk and handle. D. Gray, 43 West 93rd street, New York, N. Y.

221,728 Door holder and stop employing rubber. H. E. S. Rowland, The Homestead, Crick, near Rugby.

221,735 Electric lamp support with rubber covered grips. J. Evert, 4 Hohenzollernkorso, and G. Knapper, 68 Kaiser-Korso, both in Tempelhof, Berlin, Germany.

221,782 Inflatable life-saving buoy with gas generator chamber. N. Cherniak, 1503 East 3rd street, Bethlehem, Pennsylvania, U. S. A.

Published November 12, 1924

221,962 Corset with elastic gussets. A. B. Booth, 31 London Wall, London.

222,085 Valve for balloons and the gas bags of airships, etc. The B. F. Goodrich Co., New York, N. Y., assignee of J. R. Gammeter and W. D. Knentt, both in Akron, Ohio, and all in U. S. A.

Published November 19, 1924

222,197 Pneumatic horse collar. T. R. Turner, Kuranui Road, Morrinsville, Auckland, New Zealand.

222,255 Rubber-studded horseshoe. J. T. Applewhite, 121 Princess street, Burton-on-Trent.

222,278 Rubber-padded horseshoe. A. W. Capener, King's Cross Road, London.

Chemical Patents will be found on page 222, Machinery and Process Patents on pages 226-227

222,323 Laminar springs with rubber strip. L. T. Delaney, 59, The Avenue, Brondesbury Park, London.

222,333 Cushion tire with security band. W. B. Thorns and N. A. P. Pneumatic Tire Co., Ltd., 191 Stonhouse street, Clapham, London.

222,355 Rubber buffer for chair legs, etc. T. M. Harvard, Woodfield, New Malden, Surrey, and Leyland & Birmingham Rubber Co., Ltd., 24 Duke street, Aldgate, London.

222,457 Bathing slipper. E. A. Guinzburg, 85 Fifth avenue, New York, N. Y.

222,478 Two-tube pneumatic tire. E. Bugatti, Molsheim, Bas-Rhin, France.

Published November 26, 1924

222,619 Shock-absorbing device for sidecars, employing rubber or coiled spring. J. M. Donald, 290 Heneage street, Birmingham.

222,706 Cover for writing pad, employing rubber. Lamson Paragon Supply Co., Ltd., and A. Winder, Paragon Works, Canning Town, London.

222,744 Polishing pads employing rubber bands. H. G. Hindell, and E. V. Hatch, 163 Borough High street, London.

222,761 Rubber-and-metal heel. M. Theis, 89 Beethovenstrasse, Solingen, Germany.

222,762 Candy-wrapping machine with rubber walls and matrix. O. Lauenstein, Wernigerode, Germany.

222,802 Pneumatic tube. G. Amicarelli, Guilmi, Chieti, Italy.

Published December 3, 1924

222,827 Inflatable head rest. B. A. Martin, 421 South 47th street, Philadelphia, Pennsylvania.

222,918 Balloon tire and wheel. E. B. Killen, Queen Victoria street, London.

222,921 Metal-and-rubber mudguard. W. H. T. Beattie, 168 Bristol street, Birmingham.

222,956 Tire cover with rubber strips between fabric plies. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and W. H. Paull, Fort Dunlop, Erdington, Birmingham.

223,185 Latex-collecting spout and cup holder. S. Percival, 65 Priory Grove, South Lambeth, London.

223,187 Endless track with rubber belt. Sir A. T. Dawson, and Sir G. T. Buckham, Vickers House, Broadway, Westminster.

New Zealand

Published October 16, 1924

52,489 Rubber ring grip for milking machine teat cup. J. G. Lamb, 380 Bourke street, Melbourne, Victoria.

Published October 30, 1924

52,137 Teat cup with rubber inflation. C. H. Davis, of "Kia Ora," Countess street, Mosman, Sydney, New South Wales.

Germany

Design Patents Issued With Dates of Issue

884,128 (August 4, 1924). Canvas shoe with rubber sole. Harburger Gummiwarenfabrik Phoenix A.-G., Harburg a. E.

884,136 (August 21, 1924). Heel tread patch of rubber and leather to insure elasticity in walking. Württ Gummi-und Lederstanzwerk Christian Eifer, Schorndorf.

884,162 (September 1, 1924). Pressure cushion with Pará rubber thread filling for use in gumming leather. Peter Gilles, Riehlertal 31, Köln-Riehl.

884,382 (July 26, 1924). Inflatable rubber ball. Siegfried Saul, Dahmengraben 10, Aachen.

883,858 (August 20, 1924). Injection syringe. Firma Kurt Faulstich Gotha.

883,880 (August 28, 1924). Ring-shaped sanitary bandage. Alexander Fleischer, Marggrabowa, East Prussia.

883,946 (August 5, 1924). Rubber collar for flower pots. Frankfurter Schweissblätterfabrik Sylvain Witsenhausen & Co., Frankfurt-am-Main.

883,992 (August 29, 1924). Porous bathing shoe. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

883,997 (August 29, 1924). Hypodermic syringe. Max Muth, Langewiesen in Thuringia.

884,063 (August 25, 1924). Buckle-on cover for sleds. Uebersee-Gummiwerke, A. G., Wandsbek.

884,123 (July 29, 1924). Shirred rubber band for garters, bathing caps, etc. Dietsch & Illgen, Zculenröda in Thuringia.

884,142 (August 25, 1924). Protective cover for telescope lenses, microscopes and similar optical instruments. Uebersee-Gummiwerke, A. G., Wandsbek.

884,143 (August 25, 1924). Head-rest pad for use in shampooing ladies' hair. Uebersee-Gummiwerke, A. G., Wandsbek.

884,144 (August 25, 1924). Forehead band. Uebersee-Gummiwerke, A. G., Wandsbek.

884,149 (August 29, 1924). Sanitary binder. Gustav Hermann Senf, Oeserstrasse 5, Leipzig-Schleussig and Arno Kühne, Zschocherschestrasse 51, Leipzig-Plagwitz.

884,201 (August 9, 1924). Rubber drainers. Gummi Confektion Alexis Sachs, Berlin.

884,227 (August 30, 1924). Mat of crêpe rubber. Harburger Gummiwarenfabrik Phoenix, A. G., Harburg a. Elbe.

884,391 (August 9, 1924). Protective cover for pneumatic tires and the like. Friedrich Steigenberger, Marktplatz 7, Ulm.

884,490 (September 1, 1924). Tread with anti-skid device for bicycles and motorcycles. Heinrich Wieser, Jr., Aeussere Wienerstrasse 43, Münich.

884,588 (September 6, 1924). Skirt-holder consisting of a movable rubber band connected by rings to knee-bands and shoe-loops. Hans Harzer, Wilhelmstrasse 13, Mannheim-Feudenheim.

884,541 (August 5, 1924). Marbleized, multicolored, rubber ball and bladder. Jenny V. and Walther Reiche-Kind, Leipzig.

884,749 (September 3, 1924). Pneumatic rubber last for making footwear by gumming. Sächsische Armaturenfabrik W. Michalk & Sohn, Freital-Deuben.

884,754 (September 4, 1924). Syringe for women. Abeka-Industrie August Bengston, Dresden.

884,771 (September 2, 1924). Rubber ferrule for ski sticks. Heinrich Krebs, Langestrasse 107, Berlin.

884,779 (February 15, 1924). Pull-over socks of rubber. Carl Plaat, Köln-Nippes.

884,995 (August 16, 1924). Rubber swimming belt. Karl Riemann, Körnerstrasse 64, Leipzig.

885,034 (September 6, 1924). Laced stocking with lacing of rubber cord. Karl Stephan, Ilsenburg a. Harz.

885,124 (September 9, 1924). Apron with armholes and rubber draw string. Friedrich Bartle Hufelandstrasse 49, Berlin.

885,252 (August 25, 1924). Sponge rubber layer for electrical assemblers. Uebersee Gummiwerke A.-G., Wandsbek.

885,264 (August 28, 1924). Rubber strap for snow shoes. Gustav R. Seidel, Krumbacherstrasse 7, Munich.

885,269 (August 30, 1924). Extinguisher with sponge rubber layer. Harburger Gummiwaren Fabrik Phoenix A.-G., Harburg-an-der Elbe.

885,292 (September 6, 1924). Pneumatic rupture band. Benjamin Frank, Herzogstrasse 46, Köln-am-Rhein.

885,337 (September 11, 1924). Exchangeable rubber heel. Carl Debrand, Varziner Strasse 7, and Heinrich Niecke, Parallelstrasse 20, Saarbrücken.

885,365 (February 23, 1924). Bathing shoe with design sprayed on. Continental-Caoutchouc und Gutta-Percha-Compagnie, Hannover.

885,400 (August 29, 1924). Shoes with crêpe-rubber sole stitched through and gummed on. Oskar Emmrich Söhne G. m. b. H., Geringswalde i. S.

885,401 (August 29, 1924). Footwear with leather and crêpe rubber sole sewed on and crêpe rubber sole gummed. Oskar Emmrich Söhne G. m. b. H., Geringswalde i. S.

885,446 (September 12, 1924). Rubber laces for shoes. H. Schmidt & Co., Düsseldorf.

885,457 (June 13, 1924). Bottle with rubber ball closing. Gummiwerke Ullrich G. m. b. H., Gelnhausen.

885,480 (August 29, 1924). Knee-cap of sponge rubber. Richard Kahn, Gr. Bäckerstrasse 6, Hamburg.

885,529 (September 29, 1924). Footwear with rubber sole vulcanized on Hermann Rochel, Grossochsengasse 16, Darmstadt.

885,555 (July 25, 1924). Toy vegetables of rubber. Wilhelm Friedrich Thiele, Springerstrasse 9, Leipzig.

885,691 (August 19, 1924). Perforated rubber cap for closing vessels. Dr. Ernst Schwarz, Pettenkoferstrasse 10 B., Munich.

885,701 (August 25, 1924). Sleeve protector. Uebersee Gummiwerke A.-G., Wandsbek.

885,770 (September 11, 1924). Toy in the shape of a mouse. Viktoria-Gummiwerke G. m. b. H., Berlin.

885,948 (August 27, 1924). Stocking with perforated raw rubber ring in the top. Paul Schönfeld, Prinzenstrasse 26, Chemnitz.

886,000 (June 4, 1924). Doll with rubber head. Hedwig Maria Huldschinsky, nee Strasser, Enckeplatz 7, Berlin.

886,064 (September 16, 1924). Rubber joker. Max Manfred v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

886,090 (September 30, 1924). Exchangeable rubber insert for cigarette cases. Walter Wacker, Brückenstrasse 9-11, Chemnitz.

886,159 (September 8, 1924). Bathing scarf of rubber. Continental-Caoutchouc und Gutta-Percha Co., Hannover.

886,256 (September 4, 1924). Sponge rubber sanitary binder. August Linsel, Breite Weg 136, Magdeburg.

886,264 (September 10, 1924). Rubber cushion for parquet polisher. E. A. Lohmann & Co., Hamburg.

886,282 (September 19, 1924). Horseshoe lining of rubber. Ignaz Brunner, Maximilianeum, Munich.

886,285 (September 19, 1924). Giant cushion tire. Gummiwerke Fulda A.-G., Fulda.

886,412 (February 16, 1924). Pneumatic tire protector. Erich Zschille, Planitzstrasse 103, Chemnitz.

886,477 (September 19, 1924). Shoe polisher with sponge rubber cushion. Walter Hieronimus, Rodenbergstrasse 1, Berlin.

886,491 (September 22, 1924). Rubber last for footwear. Hugo Mandl, Holtenauerstrasse 196, Kiel.

886,492 (September 22, 1924). Means for retaining rubber soles. Rudolf Pohl, Lübz i. Mecklenburg.

886,496 (September 23, 1924). Suspenders with sponge rubber lining. Leo Grossmann, Dorfstrasse 36, Berlin-Mariendorf.

886,544 (September 1, 1924). Inflatable rubber character figure with rubber clothing. E. Kübler & Co., G. m. b. H., Berlin-Reinickendorf.

886,627 (August 5, 1924). Strips of multi-colored rubberized material. Jenny v. and Walther Reiche-Kind, Leipzig.

886,644 (August 30, 1924). Wood closing for rubber balloons. Sachsland Gummiwarenfabrik, Bürgel, Thüringia.

886,734 (September 1, 1924). Rubber air cushion in conical protective covering for kits. Nikolaus Berg, Görlitzerstrasse 44, Dresden.

886,940 (September 15, 1924). Rubber handle for ski-sticks. Dr. E. Gmelin, Niederingelheim-am-Rhein.

886,980 (September 25, 1924). Solid rubber heel. Otto Lehmann, Armbruststrasse 19, Hamburg.

886,999 (October 16, 1924). Cushion of sponge rubber. Alfred Gehler, Reitzenhainerstrasse 70, Leipzig.

887,039 (September 8, 1924). Knitted sanitary binder with rubber insert. Richard Schimmel G. m. b. H., Stuttgart.

887,078 (September 25, 1924). Air-tight and dust-proof rubber cap for watches. Friedrich Gerhard, Hamm and Heinrich Donges, Radbod, bei Hamm.

887,136 (September 16, 1924). Hard rubber case for radio receivers. Dr. Heinrich Traun & Söhne, vormals Harburger Gummikamm Co., Hamburg.

887,157 (September 25, 1924). Slipper with combined tin and rubber sole. W. Düring, Plantagenstrasse 17, Hann-Badenstedt.

887,315 (March 24, 1924). Rubber tube. Wilhelm Klotz, Schützenstrasse 64, Düsseldorf.

887,352 (September 20, 1924). Rubber tire and the like. Hannoversche Gummiwerke Excelsior A.-G., Hannover-Limmer.

887,365 (September 25, 1924). Swimming apparatus of rubber tubes. W. Föllmer, Emmerichstrasse 56, Görlitz.

887,554 (September 25, 1924). Gas and irrigator tubes of hot-vulcanized rubber with vari-colored stripes. Blödner & Vierschrodt A.-G., Gotha.

887,590 (October 3, 1924). Spats of sheet rubber. William Sachs, Lessingstrasse 33, Berlin.

887,592 (October 3, 1924). Rubber eraser. Victoria-Gummiwerke G. m. b. H., Berlin.

Patents Issued With Dates of Issue

404,836 (February 6, 1923). Block of rubber or the like to prevent rattling of automobile tops. Hans Gotfred Jorgensen, Erie, Pennsylvania, United States; represented by: G. Benjamin and H. F. Wertheimer, Berlin S. W. 11.

405,259 (June 5, 1923). Seamless rubber nipple. Erwin Martin, Oesterstrasse 23, Leipzig-Schleussig.

405,559 (June 5, 1923). Rubber treads with metal clamps. Reinhold Gollert, Neue Schönhauserstrasse 20, Berlin.

405,602 (January 25, 1923). Seat or mattress of sponge rubber. William Charles Chapman, Woodford, England; represented by: K. Walther, Berlin Friedenau.

405,686 (September 6, 1923). Rubber foot with wooden core imbedded in it. Dr. Arthur Rudow, Barkhausstrasse 16, Frankfurt-am-Main.

405,770 (November 27, 1921). Casing with skeleton of screw springs. Ernest Henry Jones, London; represented by: Dr. A. Levy and Dr. F. Heinemann, Berlin S. W. 11.

406,439 (March 1, 1924). Hollow rubber tire. Edmund Pistorius, Annaberg i. Erzgeb.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted November 18, 1924, Act of February 20, 1905

191,708 The words RIGHT-KIND SHIELDS in white lettering on a black background in the shape of a dress shield, the points of which extend up into the initial and final strokes, respectively, of the letters R-K—dress shields. R-K Shield Co., Chicago, Illinois.

191,709 PUF-LASTIC in special design of lettering—puffed elastic. The Nichols Manufacturing Co., Bridgeport, Connecticut.

191,710 The letters EJ within a circle—rubber and composition soles and heels. Endicott Johnson Corporation, Endicott, New York.

191,713 TAILOR-MAID—corsets. R & G Corset Co., Inc., New York, N. Y.

191,731 Representation of a sphere outlined in black, across the face of which is a curving line somewhat resembling an inverted letter S—golf balls. Kinesthetic Process Co., Long Island City, New York.

191,809 ELASTEX—elastic webbing. Conant, Houghton & Co., Inc., New York, N. Y.

191,822 WARRIOR—tires and inner tubes of rubber or rubber and fabric. The Mohawk Rubber Co., Akron, Ohio.

191,823 A large black letter M, having the small triangular open spaces filled in with white lines—tires and tubes of rubber or rubber and fabric. The Mohawk Rubber Co., Akron, Ohio.

191,882 SHORMACS—overshoes. Manfield & Son, Ltd., Northampton, England.

Granted November 25, 1924, Act of February 20, 1905

191,962 ECONOMY—hot water bags, rubber sheeting, syringes, surgeons' gloves, etc. Meinecke & Co., New York, N. Y.

191,968 Representation of a tag with a checkerboard border design and the word "CHECKERS" in small letters on the white space intended for the address—tires, tubes, linings, boots, and tire patches of rubber, fabric, and rubber and fabric combined. The Original Tire Co., Cincinnati, Ohio.

192,119 OBCURSO, in block letters—hydrocarbon black used in the manufacture of rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

192,120 GASCO, in block letters—hydrocarbon black used in manufacture of rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

192,121 ABYSSO, in block letters—hydrocarbon black used in manufacture of rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

192,122 SOL-NEGRO, in block letters—hydrocarbon black used in the manufacture of rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

192,123 TYPO, in block letters—hydrocarbon black used in manufacture of rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

192,124 UNGAS, in block letters—hydrocarbon black used in making rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

192,125 PERFECTO, in block letters—hydrocarbon black used in manufacture of rubber tires, rubber goods, phonograph records, etc. The United Oil & Natural Gas Products Corporation, Monroe, Louisiana.

198,080 SUPERAC—accelerators of vulcanization of rubber, gutta percha, and balata goods. The Midland Tar Distillers, Ltd., Birmingham, England.

Granted November 25, 1924, Act of March 19, 1920, Section 1 (b)

192,201 PEERLESS—rubber tires and tubes. The Gates Rubber Co., Denver, Colorado.

192,267 KATNIPS, underscored with a wavy line—dolls, tennis balls, handballs and various other balls, all made of rubber, celluloid, or similar material; also card and parlor games. Harold W. Munro, Providence, Rhode Island.

192,278 "RUBBER-SILK"—rubber reducing corsets and brassieres, etc. Model Brassiere Co., Inc., New York, N. Y.

192,291 OVERLAND, in distinctive arrangement—rubber heels for boots and shoes. Leonard & Barrows, Middleboro and Boston, Massachusetts.

192,294 Representation of a fish, with wide open mouth; this is at the center of a circle, within the annular border space of which are the words: INTERNATIONAL GRENFELL ASSOCIATION, LABRADOR—skin boots, moccasins, shoes of leather, rubber, fabrics, or combinations thereof. International Grenfell Association, St. Johns, Newfoundland.

192,386 CROSSTWIST—raincoats and topcoats. C. B. Shane Co., Chicago, Illinois.

192,402 Representation of a diamond with lines indicating brilliance, across which are the words: DIAMOND QUALITY—rubber covered wire. Diamond Braiding Mills, Chicago Heights, Illinois.

Granted December 9, 1924, Act of February 20, 1905

192,534 LEN-GLEN—boots and shoes of leather, rubber, fabric, or combinations thereof. Edward Penton & Son, London, England.

192,535 Representation of a pair of feet, walking, and under this the words: STURDY STRIDE, within an oblong border—infants' and children's shoes of leather, canvas, rubber, and combinations thereof. Glaser Shoe Co., San Francisco, California.

192,538 Representation of a golf ball—rubber or rubber composition pads for application to boots and shoes. Blakey's Boot Protectors, Ltd., Leeds, England.

192,542 HONEYMOON—garters, supporters, suspenders, etc. Harry Barnowitz, trading as Honeymoon Specialty Co., Brooklyn, N. Y.

192,543 CROCKETT & JONES, with a C&J monogram above—boots, shoes, etc., made of leather, fabric, rubber, and canvas. Crockett & Jones, Northampton, England.

192,552 TROTTERS—boots, shoes and slippers of leather, rubber, fabric and combinations thereof. Cammeyer, New York, N. Y.

192,554 RABBIT TRED, fantastically arranged—children's shoes of leather, rubber, fabric and combinations thereof. The H. W. Merriam Shoe Co., Newton, New Jersey.

192,557 KUSHIN-FUT—rubber heels. H. Jacob & Sons, Inc., Brooklyn, N. Y.

192,573 "PLUS-FOURS"—rubber or rubber composition pads for application to boots and shoes. Blakey's Boot Protectors, Ltd., Leeds, England.

192,576 CONCAVEX—rubber heels, tips, soles and pads. I. T. S. Rubber Co., Ltd., London, England.

192,591 JULIENNE, within a diamond-shaped border—boots and shoes of leather, rubber, fabric, or combinations thereof. Julienne Plumot et Cie., Paris, France.

192,592 The letter U within a rectangular border, lines being used to indicate shading on letter and border—rubber and rubber composition heels and soles. United Rubber & Leather Co., Boston, Massachusetts.

192,681 LACO—rubber sheeting, waterproof materials, etc. Charles Lavy & Co., Hamburg, Germany.

192,682 The letters LACO in fantastic arrangement in white within a white rectangular border, the whole being over a black circular background. Charles Lavy & Co., Hamburg, Germany.

192,701 NATURIZED—mechanical rubber goods, such as flooring tiles, borders and runners, wainscoting, bases, sanitary mats, stair treads, etc. Stedman Products Co., South Braintree, Massachusetts.

192,731 Within the annular space provided by the outline of a representation of a section of tubing the words: MURRAY-CONDUIT-SYSTEM; connecting the two ends of the tubing the words: MURRAY PATENTS; at the center of the design the letters CSM on what resembles three shamrock leaves—rubber tubing. Metropolitan Device Corporation, Brooklyn, New York.

Granted December 9, 1924, Act of March 19, 1920, Section 1 (b)

192,814 STYLE No. 125; then a perpendicular line, followed by the words: HIGH PRESSURE COIL, above which in smaller type the word: GARLOCK, and below in still smaller type the words: THE GARLOCK PACKING CO.—packing and packing material made wholly or partly of asbestos, rubber, cotton, flax, copper, lead, iron and babbitt. The Garlock Packing Co., Palmyra, New York.

192,816 STYLE 602; then a perpendicular line, followed by the words: HIGH PRESSURE GASKETS, above which is the word GARLOCK, in smaller type, and below which is the firm name in still smaller type—packing and packing material made wholly of or from various combinations of asbestos, rubber, cotton, etc. The Garlock Packing Co., Palmyra, New York.

192,817 SUPER-SERVICE—fabric belts for transmitting power. L. B. Gilmer, Philadelphia, Pennsylvania.

192,836 STICKS-IT—inner tube patches. The Automobile Specialty Manufacturing Co., Inc., Harrisburg, Pennsylvania.

The Dominion of Canada

Registered November 18, 1924

36,593 Blue patch of oblate octagonal form having a raised border and bearing in raised lettering the word: RHINO—rubber hose and packing. Ames Holden Tire & Rubber Co., Kitchener, Ontario.

36,594 Blue patch of oblate octagonal form having a raised border and bearing in raised lettering the word: RHINO—Ames Holden Tire & Rubber Co., Kitchener, Ontario.

36,595 Blue patch of oblate octagonal form having a raised border and bearing in raised letters the word: RHINO—rubber bands, erasers, and fountain pens. Ames Holden Tire & Rubber Co., Kitchener, Ontario.

36,605 IMPERIAL—hair combs. American Hard Rubber Co., New York, N. Y., U. S. A.

Registered November 25, 1924

36,631 RHINO-RUNNER—footwear. Ames Holden Tire & Rubber Co., Kitchener, Ontario.

36,667 ARKTITE—electrical products including receptacles and plugs. Crouse-Hinds Co., Syracuse, New York.

36,675 Blue patch of oblate octagonal form, having a raised border and bearing in raised letters the word: RHINO—rubber goods, auto top fabrics and fabrics generally, inner tubes, tires, repair stock, wheel rims, etc. Ames Holden Tire & Rubber Co., Kitchener, Ontario.

New Zealand

Registered

21,778 TITAN—rubber and gutta percha goods exclusively in Class 40. Hope, Gibbons, Ltd., Inglewood Place, Wellington.

21,801 Representation of the globe encircled by a tire—goods of rubber and gutta percha exclusively in Class 40. The Goodyear Tire & Rubber Co., Akron, Ohio, U. S. A.

21,802 FIBROK—all goods in Class 40. Fibrok Products Ltd., 10 Fenchurch avenue, London E. C. 3, England.

The United Kingdom

Published November 5, 1924

439,198 Representation of a duck, across which is the word Duxbak and beneath which is the word TRADEMARK—packings, included in Class 50, dressings for rubber tires, and cement for leather machine belting. Charles A. Schieren Co., New York, N. Y. For service in the United Kingdom address: Marks & Clerk, 57-58 Lincoln's Inn Fields, London, W. C. 2.

450,390 NOMAD—rubber tires and tubes included in Class 40, Beacon Tire & Rubber Corporation, New York, N. Y., U. S. A. For service in the United Kingdom address: J. E. Evans-Jackson & Co., 57-60 Holborn Viaduct, London, E. C. 1.

450,642 PORT-TEN—table tennis requisites, included in Class 49. S. W. Hancock, 60a Windus Road, Stoke Newington, London, N. 16.

450,683 METEORS—rubber billiard table cushions. Henry A. Murton, Ltd., 6-12 Granger street, Newcastle-on-Tyne, Northumberland.

450,944 Representation of a chess pawn—engine and machine packings and jointings included in Class 50. The Bedlam Packing & Rubber Co., Ltd., 29 Gracechurch street, London, E. C. 3.

451,084 The word CLANMAC within a rectangular figure, at the top; beneath this and in the center of the rectangle is a circular figure at the center of which is a pair of scales balanced on the point of a dagger, and in the annular space provided by the double border lines of the circle the firm name and address—waterproof clothing included in Class 38. North British Rubber Co., Ltd., Castle Mills, Fountainbridge, Edinburgh, Scotland.

452,538 NIMBUS—impregnated asbestos material in the form of rings, linings, or coverings for use in friction clutches, brake bands, shock absorbers, etc. "Scandinavia" Belting, Ltd., 59 Southwark street, London, S. E. 1.

452,539 AUREOLA—impregnated asbestos material in the form of rings, linings or coverings for use in friction clutches, brake bands, shock absorbers, etc. "Scandinavia" Belting, Ltd., 59 Southwark street, London, S. E. 1.

Published November 12, 1924

452,547 NAWAB—canvas hose. Lewis & Tylor, Gripoly Mills, Sloper Road, Cardiff.

452,665 SCANIT—impregnated asbestos material in the form of rings, linings, or coverings for use in friction clutches, brake blocks, brake bands, shock absorbers, etc. "Scandinavia" Belting, Ltd., 59 Southwark street, London, S. E. 1.

Published November 19, 1924

B451,002 DAVIS' USTIKON—rubber soles, heels, and protectors. F. J. Davis, Holmdene, Thornton Road, Clapham Park, London, S. W. 12.

Published November 26, 1924

451,482 SUNDALE—rubber soles and heels for boots and shoes. G. H. Kingham, 114-115 Broad street, Reading, Berkshire.

451,594 Representation of safe, on which a bull dog is standing—rubber instruments, apparatus, and contrivances, not medicated, for surgical or curative purposes. T. Horton, 34 Victoria street, Merthyr Tydfil, Glamorganshire.

451,831 KENATA, with the letters so arranged and graduated as to follow the outline of the diamond shaped figure in which it is inclosed; a dotted line follows the border lines on the outside of the design—bulata machine belting. Kenneth Brown & Prentice, Ltd., 99 Waterloo street, Glasgow.

451,916 MEDEA, within an oblong border—rubber tires and tubes for motor cars cycles, and motorcycles. C. H. R. Laming, 23 Angle Hill, Bury St. Edmunds, Suffolk.

451,945 DENTEMA, the letters so graduated and arranged as to form a slightly oval figure—dental composition, dental rubber, and other dental requisites. The Dentema Co., Ltd., 204-206 Great Portland street, London, W. 1.

452,432 Portrait of the late J. B. Dunlop, within oval border—tennis balls and golf balls. The Dunlop Rubber Co., Ltd., Fort Dunlop, Erdington, Birmingham.

452,484 Within a circle simulating a twist of fabrics the word MINERUB, the letters so graded in size that the largest are on the ends and the smallest at the center, a twist of the border design following the line of the letters top and bottom; beneath the bottom twist the letter M; outside of the circle and following the circumference the firm name—boots, shoes, etc., including gaiters and goloshes. The Miner Rubber Co., Ltd., Denison avenue, Granby, Quebec, Canada.

Published December 3, 1924

449,807 A circular design shaded to represent the colors, blue, black and silver bears the inscription SILVERTOWN RADIO COMPONENTS, the word Radio extending perpendicularly and the word Silvertown following the circumference at the top and so arranged that the R shall be common to the two words; the word Components follows the circumference at the bottom, and is so arranged that its central O is common with the O in radio; zigzag lines representing electrical flashing extend right and left from the space in which is the word Radio—apparatus for wireless telegraphy and telephony, included in Class 8. The India Rubber, Gutta Percha and Telegraph Works Co., Ltd., 106 Cannon street, London, E. C. 4.

449,808 BEACON—rubber tires and tubes, included in Class 40. Beacon Tire & Rubber Corporation, New York, N. Y.

451,989 DICKTORITE—asbestos brake linings and for use in friction clutches. Dick's Asbestos Co., Ltd., 47 Fenchurch street, London, E. C. 3.

452,789 Figure representing a girl dancing but having three feet and legs—all goods in Class 40. D. H. Coupe, 23 Victoria street, Douglas, Isle of Man.

452,917 MINERUBSHU—boots, shoes, etc., including galoshes and gaiters, The Miner Rubber Co., Ltd., Denison avenue, Granby, Quebec, Canada.

Designs

The United States

Issued* November 18, 1924

65,993 Tire tread. Term 7 years. A. E. Caldwell, assignor to Continental Rubber Works, both of Erie, Pennsylvania.

65,994 Tire tread. Term 7 Years. A. E. Caldwell, assignor to Continental Rubber Works, both of Erie, Pennsylvania.

65,998 Pneumatic tire. Term 14 years. L. J. De Holczer, Chicago, Illinois.

65,999 Pneumatic tire. Term 14 years. L. J. De Holczer, Chicago, Illinois.

66,043 Tire tread. Term 14 years. H. D. Reichard, Akron, Ohio.

Issued* November 25, 1924

66,083 Bathing slipper. J. T. Johnson, assignor to The American Rubber & Tire Co., both of Akron, Ohio.

66,098 Bathing slipper. R. R. Stull, assignor to The American Rubber & Tire Co., both of Akron, Ohio.

Issued* December 2, 1924

66,108 Tire tread. Term 14 years. R. D. Belden, assignor to Dunlop Tire & Rubber Co., both in Buffalo, N. Y.

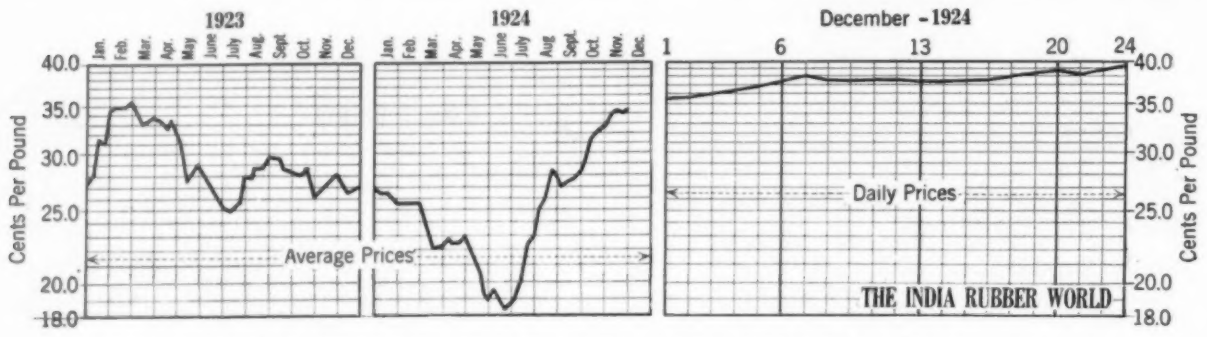
66,114 Tire. Term 7 years. H. W. Dix, New York, N. Y.

66,135 Ball. Term 3½ years. W. J. McLaughlin, Doylestown, Pennsylvania.

Issued* December 9, 1924

66,185 Tire. Term 14 years. A. H. Harris, Chattanooga, Tennessee.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

CRUDE rubber market conditions during the past month have been of unusual interest and activity in comparison with those of recent months. The upward tendency of spot rubber has been continuous for six months until the price has now reached its highest since 1920 with the market in a very strong statistical position. London stocks are less than 30,000 tons and dealers' and manufacturers' stocks in America are not quite double that figure.

Maintenance of the current price level or higher seems probable for the next two months, at the end of which time, in case the price has averaged 1*s* 6*d* for the quarter, an additional 10 per cent automatic increase of exportable allowance will be declared under the Stevenson plan. As the revised standard production is now set at 306,935 tons annually, 10 per cent increase for the new quarter will be 7,673 tons, or 2,555 tons monthly. Production will then be at 60 per cent and at best it will take a full year to attain 100 per cent under the Stevenson plan.

The last week of November the market was steady, firm, and gradually rising under the influence of higher London cables and better general outlook. Factories were in the market for small scattered lots only. Dealers held their stocks very firmly and prices rose a cent a pound by the end of the week.

The first week of December London and Singapore stocks were reported lowering, with heavy purchases by heavy buying of American interests. These conditions and good factory interest in securing supplies for manufacturing needs early in 1925 all gave rise to a very active market. Exchange advanced to $4.68½, and spot rubber reached 38 cents, closing the week at 37⅜ cents.

The following week the market held high and firm, the price of spot advancing at the week's end to 38¾ cents with less interest evident in buying spot and more in futures. Offerings of July-December deliveries at 36¼ and 36⅜ cents were made. This is 1½ cents a pound under the spot price, whereas rubber 6 to 12 months ahead is generally quoted at 1½ cents premium. This unusual condition is attributed to Dutch growers whose output is sold out up to June to British and American buyers on a sliding scale said to range from a minimum of 8 pence to a maximum of 16 pence a pound.

For the half week ending just before Christmas spot prices of ribbed smoked sheets were 39⅛ and 38⅞ cents.

On November 24, November-December ribbed smoked sheets were quoted at 34¼ cents; January-March, 34½ cents; April-June, 34⅜ cents. On December 24 these positions had advanced as follows: January, 39½ cents; January-March, 39½ cents; April-June, 39⅛ cents.

Parás held steady in sympathy with plantation and were in light demand. Balatas are available but not active.

Importations of all grades during November, 1924, were 28,660 tons, compared with 13,392 tons one year ago. Plantation arrivals for November were 26,427 tons, compared with 12,380 tons one year ago. Total importations of plantation rubber for eleven months ended November 30 were 272,460 tons, compared with 256,487 tons for the corresponding period of 1923. Total importations of all grades of rubber for the eleven months ended November 30 were 289,678 tons, compared with 271,987½ tons for the corresponding period of last year.

Total imports of rubber of all kinds for December are estimated at 19,000 pounds.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. December 1. Spot first latex crêpe, 35⅝ cents; Dec., 35⅛ cents; Jan., 35⅝-35¾ cents; Jan.-Mar., 35¾-35⅞ cents; Apr.-June, 35¼ cents.

December 24. Spot first latex crêpe, 39⅛ cents; Dec., 39⅛ cents; Jan., 39⅛ cents; Jan.-Mar., 39¼ cents; Apr.-June, 39 cents.

December 1. Spot ribbed smoked sheets, 35⅝ cents; Dec., 35⅛ cents; Jan., 35¾ cents; Jan.-Mar., 35¾-35⅞ cents; Apr.-June, 35¾ cents.

New York Spot Closing Rubber Prices

PRICES IN CENTS, PER POUND

PLANTATIONS	November, 1924						December, 1924																
	4	25	26	27*	28	29	1	2	3	4	5	6	8	9	10	11	12	13	15	16	17	18	19	20
Sheet																								
Ribbed smoked	34	34⅛	34⅝	...	34⅞	35⅛	35½	35⅝	36	36⅛	36⅞	37⅜	38	37⅝	37⅜	37½	37½	37⅜	37⅜	37½	37⅝	38	38⅛	38¼
Crêpe																								
First latex	34	34⅛	34⅝	...	34⅞	35⅛	35⅜	35⅞	36	36⅛	36⅞	37⅜	38	37⅛	37½	37½	37½	37⅛	37½	37⅝	37⅝	38	38⅛	38⅛
Off latex	33⅜	34	34⅛	...	34½	34¾	35¼	35½	35⅝	36	36½	37	37⅝	37¼	37½	37⅛	37½	37	37⅛	37¼	37¼	37½	37¾	38
No. 1 blanket																								
No. 2 blanket	33⅛	34⅛	34¼	...	34⅝	34⅝	35⅛	35¼	35⅜	36⅛	36½	36⅞	37½	37⅛	37⅛	37⅛	37⅛	36⅞	37	37	37⅛	37⅛	37⅝	38
No. 3 blanket	33⅛	33⅜	34	...	34⅛	34¾	34⅞	35	35⅛	35⅞	36⅛	36⅝	37⅛	37	36⅞	36⅞	36⅞	36⅝	36⅞	36¾	36⅞	37⅛	37⅜	37⅝
No. 4 blanket	33⅞	33½	33⅝	...	34	34⅛	34⅜	34½	34¾	35⅜	35⅝	36⅛	36⅞	36⅝	36½	36½	36½	36¼	36⅝	36½	36⅝	36⅞	37⅛	37½
Thin, clean brown	33⅝	33⅛	34⅛	...	34⅛	34½	34½	35	35⅛	35⅞	36⅜	36¾	37½	37½	37	37	36⅝	36¾	36⅞	37	37	36⅞	37½	37½
Specky brown	33⅛	33⅛	33½	...	33⅞	34	34	34	34⅞	35⅛	35½	36	37	36⅜	36⅛	36	36⅛	36	36⅛	36⅜	36⅜	36⅜	37	37¾
Rolled brown	32½	32⅞	33	...	33⅛	33½	33½	33⅜	34	34⅛	34½	34⅞	35⅛	34⅛	34⅝	34⅝	34⅜	34½	34½	34⅝	34¾	35	35⅛	35¼

*Holiday.

December 24. Spot ribbed smoked sheets, 39⅛ cents; Dec., 39⅛ cents; Jan., 39⅛ cents; Jan.-Mar., 39¼ cents; Apr.-June, 39 cents.

December 1. Spot No. 2 amber crêpe, 35¼-35½ cents; Dec., 35¼-35½ cents; Jan., 35½-35⅝ cents; Jan.-Mar., 35⅝-35¾ cents; Apr.-June, 35⅜ cents.

December 24. Spot No. 2 amber crêpe, 38¾ cents; Dec., 38¾ cents; Jan., 38¾ cents; Jan.-Mar., 38⅜ cents; Apr.-June, 38½ cents.

December 1. Spot No. 1 rolled brown crêpe, 34 cents; Dec., 34 cents; Jan., 34 cents; Jan.-Mar., 34¼-34⅜ cents; Apr.-June, 34¼ cents.

December 24. Spot No. 1 rolled brown crêpe, 36½ cents; Dec., 36½ cents; Jan., 36¼ cents; Jan.-Mar., 36¼ cents; Apr.-June, 36 cents.

SOUTH AMERICAN PARAS AND CAUCHO. December 1. Spot, upriver fine, 33½ cents; islands fine, 29¼-29½ cents; upriver coarse, 23¾-24 cents; islands coarse, 17¾ cents; Cametá, 18½ cents; caucho ball, 23¾-24 cents.

December 24. Spot, upriver fine, 36 cents; islands fine, 33¼ cents; upriver coarse, 29 cents; Cametá, 19 cents; caucho ball, 27½-29 cents.

London

December in the London crude rubber market was one of marked activity and rise in prices due to the purchases of numerous American consuming interests. The price of ribbed smoked sheets on December 1 was 18*d* and on December 23 was 19⅝*d*. The great reduction in London stocks and the favorable outlook for increased rubber consumption particularly in America has placed the market in a strong statistical position and one that will be relieved only gradually by increased production under the operation of the Stevenson plan, which will require at best a full year of maintained prices for the release of 100 per cent production. This amount under the recently revised assessment is officially set at 306,935 tons. Great interest attaches to the prices for futures, for which there is a lively American inquiry into June and beyond.

Continuous heavy deliveries the past month have steadily lowered stocks to a bare month's supply for general consumption. The record of weekly stocks are as follows: November 25, 34,539 tons; December 2, 33,617 tons; December 9, 32,722 tons; December 16, 31,423 tons; December 23, 29,759 tons.

Singapore

The market responded to those of London and New York and spot advanced steadily. On the twentieth of the month it was quoted at 19*d*, the highest since 1920. Offerings are not heavy and buying for European and American interests have brought a scarcity in spot. Futures have attracted much attention and have made a marked advance. The output of many of the large estates is reported sold out into April.

Stocks for shipment are not coming forward in great volume, due to restrictive regulation. All the conditions of supply and demand make for the continuance of firm and rising prices.

New York Quotations

Following are the New York spot rubber quotations, for one year, one month ago, and December 24, the current date:

Plantation Hevea	December 26, 1923	November 24, 1924	December 24, 1924
Rubber latex (Hevea), *per gal.*,	$1.30@	$1.30 @	$1.30 @
CREPE			
First latex	.27½@	.34 @.34¼	.39⅛@
Off latex	.27¼@	.33¼@.34	@
Amber No. 2	.24¾@	.33¼@.34	.38¾@
Amber No. 3	.24½@	.33½@.33¾	.38½@
Amber No. 4	@	.33¼@.33½	.38 @
Brown, clean, thin	.24½@	.33½@.33¾	.38½@.38⅝
Brown, specky	.24 @	.33 @.33½	.38 @
Brown, roll	.25 @	.32½@.32¾	.36½@
Sole crêpe	@	.42 @.45	.42 @.45
SHEET			
Smoked, ribbed	.26⅞@	.34 @.34⅜	.39⅛@
East Indian			
PONTIANAK			
Banjermassin	.08¾@	.07 @.07⅛	.08 @
Palembang	.09¾@	.07½@	.08½@
Pressed block	.14½@.14¾	.13½@.13¾	.13½@
Sarawak	†.07 @.07½	.07⅞@	.08 @
South American			
PARAS			
Upriver, fine	.22 @	.32¾@	.36 @
Upriver, fine	*.31¾@	*.43½@	*.50 @
Upriver, medium	.19 @	.30 @	.34 @
Upriver, coarse	.18½@	.23½@	.29 @
Upriver, coarse	*.29 @	*.33 @	*.41 @
Islands, fine	.20 @	.29¼@	.33¼@
Islands, medium	†.17 @	@	@
Islands, coarse	.12 @	@	@
South American			
PARAS			
Cametá	.13 @	†.18 @	.19 @
Acre Bolivian, fine	.22½@	.33 @	.36½@
Acre Bolivian, fine	*.32 @	*.44 @	*.50½@
Beni Bolivian	†.23 @	.33¼@	@
Madeira, fine	†.23 @	.33½@	.36½@
Peruvian, fine	†.21 @	.31¼@	.35½@
Tapajos, fine	.20½@	.31¼@	.34¼@
CAUCHO			
Upper caucho ball	.20 @	.23½@	.29 @
Upper caucho ball	*.29¾@	*.33 @	*.41 @
Lower caucho ball	.19 @	.21½@	.27½@
Maniçobas			
Ceará negro heads	.20 @	.26 @	.27 @
Ceará scrap	.08 @	.12 @	.18 @
Maniçoba 30% guaranty	@	.24 @	.26 @
Mangabeira, thin sheet	.22 @	.27 @	.29 @
Centrals			
Central scrap	@	.23 @.23½	@
Central wet sheet	.12 @	.13 @.16	@
Corinto scrap	.17½@	.23 @.23½	@
Esmeralda sausage	.17¾@	.23 @.23½	@
Guayule washed and dried	.25 @	.28 @ .31	@
Africans			
Benguela, No. 2, 32½%	.12 @.13	†.16 @	†.18 @
Congo prime, black upper	.20 @	.26 @	.28 @
Congo prime, red upper	.18 @.19	.25 @	.27 @
Kassai, black	.19 @.20	.26 @	.28 @
Kassai, red	.19 @	.25 @	.27 @
Gutta Percha			
Gutta Siak	.17¼@	.17 @.18⅜	.18½@
Gutta Soh	.29 @	.27 @.28½	.28 @
Red Macassar	2.90 @	†3.00 @	3.25 @
Balata			
Block, Ciudad Bolivar	.69 @.70	.62 @.64	.61½@
Colombia	.56 @	.48 @.51	.51 @
Panama	.56 @	.48 @.50	.51 @
Surinam, sheet	.74 @	.74 @.75	.76 @
amber	.78 @	.76 @.78	.79 @
Chicle			
Honduras	.62 @	‡.58 @.68	‡.58 @.68
Yucatan, fine	.65 @	‡.58 @.68	‡.58 @.68

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.
‡Duty paid.

Comparative Low and High New York Spot Rubber Prices

	December		
PLANTATIONS	1924*	1923	1922
First latex crêpe	$0.35⅝@$0.39⅓	$0.26¾@$0.27¼	$0.26¾@$0.28
Smoked sheet, ribbed	.35⅝@ .39⅜	.26¾@ .27¼	.26¾@ .28
PARAS			
Upriver, fine	.33½@ .39⅛	.21¾@ .23½	.23¾@ .25½
Upriver, coarse	.23¾@ .29	.18 @ .19	.17 @ .18½
Islands, fine	.29¼@ 33¾	.19 @ .20¼	.22¼@ .23½
Islands, coarse		.11 @ .11¾	.12¼@ .17½
Cametá	.18¼@ .20½	.10¾@ .12¾	.09¼@ .12½

*Figured to December 24, 1924.

British Malaya

Rubber Exports

An official cablegram from Singapore states that the amount of rubber exported from British Malaya during the month of November was 22,488 tons. The amount of rubber imported was 9,617 tons, of which 7,718 tons were declared as wet rubber.

The following are comparative statistics:

	1923		1924	
	Gross Exports, Tons	Foreign Imports, Tons	Gross Exports, Tons	Foreign Imports, Tons
January	22,871	4,358	23,844	8,867
February	19,907	4,085	19,395	7,440
March	23,646	5,108	22,294	8,269
April	24,038	5,389	20,551	7,909
May	20,115	5,026	19,674	7,259
June	18,621	4,957	18,084	7,435
July	16,749	5,624	21,670	9,777
August	19,806	7,042	22,133	9,776
September	21,955	5,269	25,127	9,291
October	21,424	6,341	20,270	9,981
November	17,543	7,442	22,488	9,617
Totals	226,645	60,639	235,530	95,621

Reclaimed Rubber

The steadily increasing activity of the manufacturing divisions of the rubber industry and the upward course of crude rubber prices are reflected in capacity production in the reclaiming industry.

Prices on nearly all reclaims have advanced in the past month. High grade stocks are much in demand owing to the persistent rise in crude which is now double the prices of six months ago.

This situation has brought to rubber manufacturers a fuller realization of the pronounced advantages of the so-called super reclaim grades and led to their increasing popularity in friction and mechanical goods generally due to their smooth working quality, high tensile, plasticity and low volume cost.

New York Quotations

December 24, 1924

Auto Tire			
Black	lb.	$0.08¼ @	$0.09
Black, washed	lb.	.10¼ @	.10¾
Dark gray	lb.	.09¾ @	.10
Light gray	lb.	.11½ @	.12
White	lb.	.14½ @	.15
High Tensile Black			
Super-reclaim, No. 1	lb.	.16½ @	.17
No. 2	lb.	.12 @	.13
Shoe			
Unwashed	lb.	.09 @	.09½
Washed	lb.	.12½ @	.12¾
Tube			
No. 1	lb.	.14½ @	.15½
No. 2	lb.	.11½ @	.12½
Uncured Tire Friction			
No. 1	lb.	.27 @	.30
No. 3	lb.	.22 @	.24
Miscellaneous			
High grade, red	lb.	.14 @	.14¼
Truck tire	lb.	.09 @	.09½
Mechanical blends	lb.	.06¼ @	.07

COLORED RUBBER LABELS

Neat and attractive labels in color permanently and inoffensively attached to rubber articles have not heretofore characterized rubber goods generally. Such labels, which will persist in identifying the maker with his goods, are now available in the form of an all-rubber brand in two or three color combinations and adapted for marking tires, belts, hose, etc. They are cut out ready to apply without the use of cement and do not became distorted in either mold or wrapped cure. They may also be applied to cured goods and their use greatly improves the appearance of the rubber articles.

WINS FIRESTONE UNIVERSITY SCHOLARSHIP

John Liska, a high school student of Wisconsin Rapids, Wisconsin, has been announced as winning the H. S. Firestone University Scholarship for 1924, his essay having been selected as the best among more than 200,000 submitted. Three other students received honorable mention. The good roads essay contest, financed by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., has been continued for five years, the subject of this year's essay being "The Relation of Improved Highways to Home Life."

AMERICAN IMPORTATIONS OF AUTOMOBILE TIRES

During the first ten months of the present year the United States has imported automobile tires from various sources as follows: France, 181,671 casings, value $1,071,513; Canada, 812 casings, value $9,747; and Great Britain, 298 casings, value $2,977. Since the first of August the tire imports from France have practically ceased.—*Commerce Reports.*

The Market for Rubber Scrap

The general tone of the rubber scrap market is firm. Prices for all grades except boots and shoes and hard rubber have advanced sharply during the past month owing to reclaimers' demand for stock replenishment against their 1925 production. Another factor in the price situation is found in the upward course of crude rubber prices which have within six months risen to a level above that reached within two years.

BOOTS AND SHOES. Prices have remained practically stationary the past month. The demand from reclaimers has been dull with limited inquiry from consumers. The strength in crude rubber, however, is considered a highly encouraging factor.

INNER TUBES. Tube scrap has been in improved demand for domestic consumption and the higher prices have been met. Export prices are not as attractive, comparatively, as they were. Dealers have been bidding as much for domestic business delivered to consuming mill as for export.

MIXED TIRES. The sharp rise in tire scrap has been a feature of the market under active buying. The advance of solid tires has been particularly heavy, reaching $38 to $40 a ton delivered New England points.

AIR BRAKE AND MECHANICAL SCRAP. These grades, especially air brake hose, have shared in the general advance and are meeting with good demand.

Consumers' Quotations for Carload Lots Delivered

December 24, 1924

Boots and Shoes			
Boots and shoes, black	lb.	$0.02⅛ @	$0.02½
Trimmed arctics, black	lb.	.01⅞ @	.02
Red and white	lb.	.01 @	.01¼
Untrimmed arctics	lb.	.01¼ @	.01⅜
Hard Rubber			
Battery jars, black compound	lb.	.01 @	—
No. 1 scrap	lb.	.05 @	.06
Inner Tubes			
No. 1 floating	lb.	.06¼ @	.06½
No. 2 compounded	lb.	.04¼ @	.04½
Red	lb.	.03¼ @	.03½
Mechanicals			
Black scrap, mixed	lb.	.01½ @	.01¾
Heels	lb.	.00¾ @	—
Horseshoe pads	lb.	.01 @	—
Hose, air brake	ton	20.00	@22.00
regular	ton	17.00	@20.00
Red, scrap, mixed	lb.	.02 @	—
White, scrap, mixed	lb.	.02 @	—
Tires			
PNEUMATIC			
Auto peelings	ton	50.00	@60.00
Bicycle	ton	12.00	@15.00
Standard white auto, with beads	ton	30.00	@35.00
Mixed auto, with beads	ton	20.00	@22.00
SOLID			
Carriage	ton	25.00	@27.00
Truck, clean	ton	38.00	@40.00

INCREASE IN BRITISH AND AMERICAN RUBBER GOODS EXPORTS

The similar trend in the rubber goods export trade of Great Britain and the United States is evident from the following tabulation published by *Commerce Reports*. It will be noted that the value of the exports of each country in 1923 bore about the same ratio to the value of the trade in 1920.

BRITISH AND AMERICAN RUBBER GOODS EXPORTS COMPARED

Year	Great Britain	Percentage of 1920	United States	Percentage of 1920
1920	£15,342,281	100.0	$85,436,897	100.0
1921	5,941,932	38.7	30,787,300	36.0
1922	6,319,292	41.2	34,008,231	39.8
1923	6,735,352	43.9	36,972,563	43.3

The Market for Chemicals and Compounding Ingredients

New York

IN every department of the rubber manufacturing industry the demand for compounding ingredients has been strong for the past month. Deliveries fell off during the last half, owing to the reduction of activity in the annual inventory period. Commitments on the important basic ingredients have been made by the larger rubber companies for delivery covering their needs on an increased production basis well into 1925.

ACCELERATORS. In the leading lines of rubber products the use of accelerators has become general, with specialization or selection evident to meet particular requirements. Virtually all the accelerators used are of domestic manufacture, with super accelerators steadily gaining in favor wherever applicable. This tendency will doubtless gain further momentum by reason of announced price concessions.

BENZOL. Prices remain steady. Stocks have steadily increased because many coke ovens have resumed operation the past few weeks.

CARBON BLACK. Stocks are far in excess of requirements. Competition is keen, at very low levels which show virtually no profit to the producer. Large consumers have contracted for 1925 delivery at prices well under the current market. Efforts to consolidate the carbon black producing interests have not met with success. Producers are adding to their already excessive stocks of black because of their gas contracts and the necessity of continuing operations to maintain their plant and product at grade quality.

CLAY. High grade rubber compounding clay is in good demand at firm prices. The cheaper clays, of which there are many small producers, are also moving in good volume but at very much demoralized prices.

LITHARGE. The demand holds strong for prompt shipment. Lead oxides are up ½ cent a pound and this advance is general. Litharge in kegs remained unchanged.

LITHOPONE. Spot deliveries have been large, with considerable future interest evident. Prices firm and practically unchanged.

THERMATOMIC CARBON. The technical merits of this material have been so far established by practical results that heavy commitments for the material are already assured for 1925.

WHITING. The price situation is badly demoralized and producers are endeavoring to restore profitable conditions by some arrangement for mutual support.

ZINC OXIDE. The market tone is strong with much improvement in the consuming demand.

New York Quotations

December 24, 1924

Accelerators, Inorganic

Lead, carbonate	lb.	$0.10¾	@
Lead, red	lb.	.12½	@
sublimed blue	lb.	.10¼	@
sublimed white	lb.	.10¾	@
Lime, flour	lb.		@
R. M. (factory)	lb.	.01¼	@
R. M. hydrated	ton	15.00	@$35.00
superfine	lb.	.01½	@ 0.02
Litharge	lb.	.11¼	@ .12
Magnesia, carbonate	lb.	.07¾	@ .08
calcined, light (bbls.)	lb.	.24	@ .40
calcined, ex. light (bbls.)	lb.	.40	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04¾	@
magnesium, carbonate, light,	lb.	.07	@ .07¼
Orange mineral A.A.A	lb.	.15½	@
Rubber lead	lb.	.11	@

Accelerators, Organic

A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Accelemal	lb.	.30	@
Aldehyde ammonia powder	lb.	.95	@
Anhydro formaldehyde aniline	lb.	.38	@
Androformaldehyde-para-toluidine	lb.	1.11	@
Aniline (factory)	lb.	.17	@
sulphate	lb.		@
Benzidine (base)	lb.	.76	@
Cryline	lb.	.60	@
Dimethylaniline	lb.	.35	@
Di-ortho-tolylguanidine	lb.	1.26	@
Di-ortho-tolythiourea	lb.	.32	@
Diphenyl guanidine	lb.	1.10	@ 1.20
Ethylidene aniline	lb.	.75	@
Excellerex	lb.	.40	@ .43
Formaldehyde aniline	lb.	.42½	@
Hexamethylene tetramine	lb.	.85	@
Lead oleate (fac'ty)	lb.	.16	@
Methylene aniline	lb.	.39	@ .41
Methylenedianilide	lb.	.40	@
No. 999	lb.	.16	@
Shawinigan paraldehyde	lb.	.17	@ .19
Para-nitrosodimethylaniline	lb.	.90	@
Paraphenylene diamine	lb.	1.30	@ 1.40
Super-sulphur, No. 1	lb.	.50	@
No. 2	lb.	.20	@ .30
Tuads	lb.	4.50	@ 6.00
Thiocarbanilide	lb.	.25	@ .30
Triphenylguanidine	lb.	.71	@ .75
Vulcone	lb.	.80	@

Acids

Acetic 28% (bbls.)	100 lbs.	3.12	@ 3.38
glacial (carboys)	100 lbs.	11.51	@11.75
Cresylic (95% straw color)	gal.	.62	@ .65
(95% dark)	gal.	.58	@ .61
Sulphuric, 66° (carboys)	lb.	.02	@

Alkalies

Caustic soda	100 lbs.	$3.10	@$3.90
flake, 76% (factory)	100 lbs.	3.60	@ 4.31
solid, 76% (factory)	100 lbs.	3.20	@ 3.91

Colors

BLACK

Aerfloted arrow	lb.	.06	@ .09½
Bone	lb.	.08	@ .09½
Carbon black	lb.	.06	@ .10
compressed	lb.	.06½	@ .11
Drop	lb.	.08	@ .09
Ivory black	lb.	.12	@ .30
Lampblack	lb.	.10	@ .12
Micronex	lb.	.07	@ .12
A. & W. nonfil	lb.	.40	@
Shawinigan	lb.	.17	@ .18
Thermatomic carbon (factory)	lb.	.04	@

BLUE

Cobalt	lb.	.21	@ .26
A. & W. blue	lb.	2.00	@ 4.00
Prussian	lb.	.40	@ .50
Ultramarine	lb.	.10	@ .35

BROWN

Iron oxide	lb.	.04½	@ .05
Sienna, Italian	lb.	.06½	@ .07
Umber, Turkey	lb.	.04½	@ .05

GREEN

Chrome, light	lb.	.28	@ .30
medium	lb.	.30	@ .32
dark	lb.	.32	@ .35
commercial	lb.	.10	@ .10½
tile	lb.	.13	@ .15
A. & W. green	lb.	2.00	@ 3.00
Oxide of chromium	lb.	.36	@ .51
T. K	lb.	.40	@ .45

RED

Antimony, golden	lb.	.22	@ .25
golden T. K	lb.	.18	@ .22
golden R.M.P. No. 7	lb.	.18	@
golden pentasulphide, T. K	lb.	.33	@ .35
golden, 15/17% G. E	lb.	.18	@ .20
golden, 15/17% F. S	lb.	.18	@
golden, No. 1	lb.	.30	@
golden, No. 2	lb.	.20	@
Antimony, crimson	lb.	.42	@ .45
crimson T. K	lb.	.45	@ .50
crimson, 15/17% G. E	lb.	.40	@ .45
crimson, 15/17% F. S	lb.	.39	@
crimson, R.M.P. No. 3	lb.	.48	@
crimson F	lb.	.45	@
7-A	lb.	.35	@
7-2	lb.	.18	@
Vermilion, 5% F. S	lb.	.65	@
Vermilion 15/17% F.S.	lb.	.50	@
Arsenic, red-sulphide	lb.		@
A. & W. red (4 shades)	lb.	1.50	@ 3.00
purple	lb.	2.00	@ 3.00

RED—Continued

Iron oxides			
domestic	lb.	$0.12	@
English	lb.	.12	@
English Indian	lb.	.09	@ .13
Indian, pure	lb.	.08	@ .13
pure bright	lb.	.11	@ .14
reduced	lb.	.07	@ .10½
Spanish	lb.	.02½	@ .04
Venetian	lb.	.02½	@ .05½
Oximony	lb.	.13½	@
Pará toner	lb.	.90	@ 1.00
Toluidine toner	lb.	1.95	@ 2.25
Vermilion, **English**	lb.	1.30	@ 1.35

WHITE

Akcolith	lb.		@
Albalith	lb.	.06½	@ .06½
Aluminum bronze	lb.	.60	@ 1.25
Lithopone	lb.	.06¾	@ .06¾
Sterling	lb.	.06¾	@ .06¾
Azolith	lb.	.06¼	@ .06¾
Imported	lb.	.05¾	@ .06¼
Red seal, imported	lb.		@
T. O. pigment	lb.	.15	@ .17
Zinc oxide			
AAA, lead free	lb.	.08	@ .08¼
Azo (factory):			
ZZZ (lead free)	lb.	.07¾	@ .08¼
ZZ (5% leaded)	lb.	.06¾	@ .07¼
Z (8.10% leaded)	lb.	.06¾	@ .07¼
French process, Florence brand			
Green seal	lb.	.10¾	@ .11¾
Red seal	lb.	.09½	@ .10¼
U. S. P.	lb.	.15¾	@ .17¾
White seal	lb.	.11¾	@ .12¼
Horse Head brands			
Selected	lb.	.08½	@ .08¾
Special	lb.	.08½	@ .08¾
XX red	lb.	.08	@ .08¼
Leaded brands			
Lehigh	lb.	.07¼	@ .07¾
Standard	lb.	.07¼	@ .07¾
Sterling	lb.	.07¼	@ .07¾
Superior	lb.	.07¼	@ .07¾
Palmerton process			
Kadox, black	lb.	.10¾	@ .11¾
blue	lb.	.09¾	@ .10¾
red	lb.	.08¾	@ .09¾
Snow white	lb.		@

YELLOW

Arsenic	lb.	.65	@ .75
Chrome	lb.	.18	@ .21
A. & W. yellow	lb.	2.50	@ 4.00
India rubber	lb.	.75	@
Ochre, domestic	lb.	.02½	@ .03½
imported	lb.	.02	@ .03

Compounding Ingredients

Aluminum flake (sacks C.L.)	ton	$21.85	@
(sacks L. C. L.)	ton	24.50	@
Ammonia carbonate	lb.	.12½	@$0.12¾
Asbestine	ton	15.00	@18.00
Aluminum silicate	ton	22.00	@25.00
Barium, carbonate (bags)	ton	63.00	@65.00
dust	lb.	.05	@
Barytes, imported	ton	28.00	@38.00
pure white	ton	30.00	@35.00
O.C.X., off color	ton		@
water ground and floated	ton	23.00	@26.00
Basofor	lb.	.04¾	@
Blanc fixe	lb.	.04	@ .04½
Carrara filler (factory)	lb.	.01¾	@ .02
Chalk, precip. extra light	lb.	.04¼	@ .05
heavy (f.o.b. factory)	lb.	.03¼	@ .04
Clay, Dixie	ton	20.00	@35.00
Blue ribbon (C. L. facty.)	ton	14.00	@
Blue Ridge	ton	12.00	@24.00
Catalpo (facty.)	ton	38.00	@40.00
China	lb.	.01¾	@ .02½
China, L. H. B.	ton	13.00	@22.50
English, L. H. B.	lb.	.02½	@ .02¾
Langford	ton	12.00	@22.00
Cotton flock, black	lb.		@
light-colored	lb.		@
white	lb.		@
Cotton linters clean mill-run	lb.	.04½	@
Fossil flour (powdered)	ton		@
(bolted)	ton		@
Glue, high grade	lb.	.21	@ .29
medium	lb.	.19	@ .25
low grade	lb.	.14	@ .18
Graphite, flake	lb.	.06½	@ .12
Infusorial earth (pow'd)	lb.	.03½	@
(bolted)	ton		@
Lime (bolted)	lb.	.02	@
Mica, amber	lb.	.05	@
powdered	lb.		@
white	lb.		@
Pumice stone, powd.	lb.	.03	@ .03
Rotten stone (bbls.)	lb.	.02½	@ .04½
Slate flour (facty.)	ton	8.50	@15.00
Soap bark, cut	lb.	.09	@ .09½
Soapstone	ton	15.00	@25.00
Sodium bicarbonate (bbls.) 100 lbs.		2.00	@
Starch, powd. corn (bags)		3.97	@ 4.07
(bbls.) 100 lbs.		4.24	@ 4.34
Talc, soapstone	ton	15.00	@22.00
Terra blanche	ton	23.00	@28.00
Whiting, domestic No. 33	ton	10.00	@
chalk, L. H. B.	ton	16.00	@25.00
commercial (facty.) 100 lbs.		1.00	@ 1.15
English, imported	lb.	.01¼	@
English, cliffstone (factory) 100 lbs.		1.50	@ 2.00
Georgia calcite	ton		@
gilders (bolted) 100 lbs.		1.25	@ 1.35
Nelco	ton	11.00	@22.50

Chemical Market—*Continued*

New York Quotations

December 24, 1924

Perfection	ton	$13.00	@$18.00
Quaker	ton	13.00	@15.00
Snowflake white	ton		@
Superfine	ton		@
Sussex	ton	8.00	@10.00
Witco (C. L.)	ton	12.00	@
York	ton	8.00	@
Wood pulp, XXX (facty.)	ton	35.00	@
X (facty.)	ton	25.00	@

Mineral Rubber

Genasco (facty.)	ton	50.00	@52.00
Gilsonite	ton		@
Granulated M. R.	ton	35.00	@45.00
Hydrocarbon, hard	ton	29.00	@35.00
Hydrocarbon, soft	ton	29.00	@35.00
Ohmlac Kapak, K-R	ton	30.00	@60.00
K-4	ton	175.00	@
320/340 m. p. hydrocarbon	ton	47.00	@52.00
300/310 m. p. hydrocarbon	ton	42.00	@47.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid, (facty.)	ton	35.00	@75.00
M. R. (gran. facty.)	ton	42.00	@80.00
Rubrax (facty.)	ton	60.00	@
Synpro, gran. M. R. (facty.)	ton		@

Resins and Pitches

Tar, pine, retort	bbl.	13.00	@
kiln	bbl.	12.50	@14.00
Pitch, Burgundy	lb.	.05½	@
coal tar	ton	30.00	@
Fluxol hardwood	lb.	.03	@ .04
pine tar	bbl.	5.50	@ 6.00
ponto	lb.	.05½	@
Rosin, K (bbl.) 280 lbs.		8.00	@
strained (bbl.) 280 lbs.		7.90	@
Shellac, fine orange	lb.	.66	@ .67
substitute	gal.	1.50	@
Peanut, crude	lb.	.14	@
refined	lb.	.17	@
Petrolatum, standard	lb.	.06	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.68	@ .70
Rapeseed, refined	gal.	1.00	@
blown	gal.	1.15	@
Resin	gal.	.49	@ .50
Soya bean	lb.	.13½	@
Tar	gal.	.28	@ .34
Woburn	lb.	.05	@

Oils (Softeners)

Avoilas compound	lb.	.12	@ .13
Castor, No. 1, U. S. P.	lb.	.17½	@
No. 3, U. S. P.	lb.	.17	@
Corn, crude (bbls.)	lb.	.13	@
Cotton, Summer yellow	lb.	.13	@
Cycline	gal.	$0.35	@$0.38
Glycerine	lb.	.19	@ .19½
Linseed, raw	gal.	1.20	@
Liquid rubber	lb.	.11	@
Palm lagos	lb.	.12	@
clarified	lb.	.09½	@ .10
Palm, niger	lb.	.11½	@
Parra M. R. flux	lb.	.06	@ .07

Solvents

Acetone (98.99%, [6.62 lbs. gal.])	lb.	.14	@ .15
Benzol (90%, 7.21 lbs. gal.) pure	gal.	.23	@ .28
Carbon bisulphide (10.81 lbs. gal.)	lb.	.06	@ .06½
tetrachloride (13.28 lbs. gal.)	lb.	.06¾	@ .07¼
Gasoline			
No. 303			
Tankcars	gal.	.20	@
Drums, C. L.	gal.	.23	@
Drums, L. C. L.	gal.	.26	@
Motor gas (steel bbls.)	gal.	.15	@
Naphtha, V. M. & P.	gal.	.14½	@
68° Bé., 122°, 324°	gal.	.17½	@
70° Bé., 114°, 314°	gal.	.18½	@
71° Bé., 112°, 304°	gal.	.19½	@
Turpentine, spirits	gal.	.83	@
wood, steam distilled	gal.	.75	@

Substitutes

Black	lb.	.08	@ .14
Brown	lb.	.10	@ .15
White	lb.	.09	@ .15
Brown factice	lb.	.09	@ .14
White factice	lb.	.08¾	@ .16

Vulcanizing Ingredients

Black hypo	lb.	.18	@
13% F. S.	lb.	.20	@
Sulphur chloride (drums)	lb.	.04½	@ .05
Sulphur, Bergenport brand, 100% pure (C.L.) 100 lbs.		2.35	@ 2.60
(L.C.L.) 100 lbs.		2.65	@ 2.90
Sulphur, Brooklyn brands			
Refined velvet (bbls.) 100 lbs.		2.60	@ 3.15
(bags) 100 lbs.		2.35	@ 2.90
Superfine flour (bbls.) 100 lbs.		2.40	@ 2.90
(bags) 100 lbs.		2.00	@ 2.50
Rubber makers 100 lbs.		3.25	@ 3.75

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com	lb.	.48	@ .52
ceresine, white	lb.	.10	@ .11
carnauba	lb.	.21½	@ .22
montan	lb.	.06	@ .06¼
ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30

Paraffin

122/124 white crude scale	lb.	.06	@
124/126 white crude scale	lb.	.06¼	@
120/122 fully refined	lb.	.06¾	@
125/127 fully refined	lb.	.06½	@

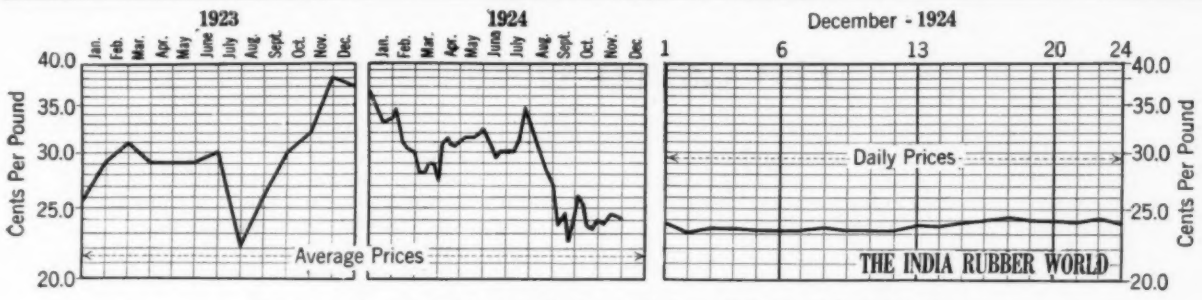
BRITISH INDIA MARKET FOR RUBBER-SOLED FOOTWEAR

There is a steadily developing market in British India for canvas-topped, rubber-soled tennis shoes, such footwear being almost universally used by the average European and the educated natives. During the year ended March, 1922, only 77,967 pairs of this class of shoes were imported; during the year ended March, 1923, this number had increased to 262,311 pairs, and for the year ended March, 1924, to 530,845. Most of these imports were from Continental Europe and China, and represented for the most part shoes whose landed cost probably did not exceed 50 or 60 cents a pair. At the present time, however, an attempt is being made by two companies having factories in Canada to introduce rubber-soled footwear of the best quality, a persistent personal canvass of the market being considered the chief requisite for sales.

The United States exports to British India of canvas rubber-soled shoes show that this country is securing a fair share of the trade, such exports numbering in 1922 17,317 pairs; in 1923 37,057 pairs; and for the first half of 1924, 16,456 pairs.—*Commerce Reports.*

PLANS FOR 1925 CHEMICAL EXPOSITION

A program of interest is being prepared by those in charge of the Tenth Exposition of Chemical Industries, this event taking place during the week of September 28 to October 3, 1925, at the Grand Central Palace, New York, N. Y. Although, owing to restricted time, only the larger problems of chemical production, distribution and consumption can be considered, it has been thought advisable to hold in conjunction with the exposition sessions a joint meeting of some twenty technical and commercial associations, and this idea may be expanded in 1926 to include a still larger conference of all the chemical equipment and engineering interests of the country.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Spot middling upland cotton ruled lower in price during the past month than in the month preceding. After reacting from the 25 cent high level of November the spot quotation fell to 23.15 and did not recover beyond 24.25 cents. The price just before the holidays was firm at 23.90, compared with 23.75 cents on December 1.

The government estimates the crop at 13,153,000 bales. Exports are heavy and well in excess of those of last year. The census report showed domestic mill consumption of 532,629 bales for October, against 543,260 last year, while they have stocks of only 730,656 bales against 1,106,347 last year. The general belief that the crop may exceed 13,000,000 bales has given point to the opinion of some trades that 25 cents will be the maximum price and expectation of 24 cents as the average.

It is questioned whether present cotton prices in relation to those of other commodities are sufficiently high to encourage planting of as large an acreage in the South for next season as the last, owing to the relatively high prices for outside growths, while estimates of the world's probable consumption are being raised.

ARIZONA COTTON. Pimas are following the advance in Sakels but there is very little of this staple now available owing to the smallness of the crop and the rapidity with which it has passed into the consumer's hands.

EGYPTIAN COTTON. The present time is marked by a heavy and strong rise in the prices of Sakelaridis grades. This movement has carried the value of the high grades well over 60 cents a pound. There has been a considerable rise in uppers but medium grades can still be purchased well under 40 cents. Short covering is believed to be largely responsible for the sharp advance in Sakels but the rise in uppers is undoubtedly due to legitimate demands of new business.

Several large tire making companies have purchased heavily of extra staple peeler cotton. This movement is believed to be a hedge against the threatened corner in Egyptians. This demand, if well sustained, cannot fail to exert a strong influence in bringing American peeler and Egyptian upper prices into fairer relation than at present. In fact, the Egyptian market has already become somewhat easier under this influence, with Sakels off about 2 cents.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market for these lines is steady. Stocks are in good supply and demand by rubber companies is gaining sharply in volume. Good business is indicated over the first six months of 1925.

RAINCOAT FABRICS. The market is active and demand is for better goods for garments than the average for last season.

SHEETINGS. The general market situation in sheetings the past month has been rather inactive, with demand closely limited to current needs. Prices were unchanged and firmer preceding the holiday season of inactivity and inventory.

TIRE FABRICS. Three leading companies are said to supply half the domestic tire fabric demand. Fabric consumption for 1925 will probably show 10 to 15 per cent increase. Tire companies are steadily in the market for small quantities and work on spring production has begun. Several fabric mills are sold up through the first quarter of the new year and not much heavy buying is expected until February, although some tire companies have placed orders for May and June delivery. The demand is mostly for carded peeler and the best price basis seems to be 53 cents.

New York Quotations

December 24, 1924

Drills

38-inch 2.00-yard	yard	$0.22 @
40-inch 3.47-yard		.13 @
52-inch 1.90-yard		.24½ @
60-inch 1.52-yard		.30½ @

Duck

38-inch 2.00-yard	yard	.23½ @
40-inch 1.47-yard		.31¾ @
72-inch 16.66-ounce		.54½ @
72-inch 17.21-ounce		.56 @
MECHANICAL		
Hose	pound	.45½ @
Belting		.44½ @
TENNIS		
52-inch 1.35 yard	yard	.37½ @

Hollands

DEAD FINISH		
Standard, 37-inch	yard	.19½ @
42-inch		.23½ @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17½ @
RED SEAL		
36-inch		.18 @
40-inch		.19 @
50-inch		.30 @

Osnaburgs

40-inch 2.35-yard	yard	.19¼ @
40-inch 2.48-yard		.18¾ @
40-inch 3.00-yard		.15½ @
37-inch 2.42-yard		.19½ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	yard	.12½ @
Bombazine 60 x 48		.11½ @
Plaids 60 x 48		.12½ @
Plaids 56 x 54		.12 @
Surface prints 60 x 48		.12½ @
Surface print 64x60		.13½ @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.16¼ @
48 x 48, 2.85-yard		.14¾ @
64 x 68, 3.15-yard		.14¾ @
56 x 60, 3.60-yard		.12¼ @
48 x 44, 3.75-yard		.11¼ @

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	$0.09¼ @
40 x 40, 6.15-yard		.07¾ @

Tire Fabrics

SQUARE WOVEN 17¼-ounce			
Egyptian, karded	pound	.65 @	.68
Peeler, karded		.51 @	.54
CORD 23/5/3			
Egyptian, combed	pound	.78 @	.80
Egyptian, karded		.68 @	.70
Peeler, combed		.67 @	
Peeler, combed, 1 1/16-in.	pound	.71 @	.73
Peeler, karded		.53 @	.55
CORD 13/3/3			
Peeler, karded	pound	.51 @	.53
LENO BREAKER			
8-oz. Peeler, karded	pound	.51 @	.54
10-oz. Peeler, karded		.51 @	.54
CHAFER			
8.25-oz. Peeler, karded	pound	.51 @	.53
9.5-oz. Peeler, karded		.51 @	.53
12-oz. Peeler, karded		.50 @	.51
14-oz. Peeler, karded		.50 @	.51

The Cotton Outlook

The Cotton Textile Situation

IN a pamphlet entitled "New England's Industrial Future," Orra L. Stone, general manager of Associated Industries of Massachusetts, authoritatively summarizes the cotton textile situation as regards the rapid growth of southern mills, which threatens New England supremacy in this industry. He writes as follows:

It is agreed by all who are conversant with Massachusetts industry that the cotton mills have a peculiar problem in meeting the competition of the mills in the South Atlantic States. The latter have and will continue to have raw material close at hand; an unfailing supply of hydro-electric power; at the present, a plentiful supply of white labor of a type that makes dependable factory hands; longer hours than are permitted in the New England mills; lower labor costs; comparative freedom from strikes; and modern plants equipped with the latest machinery.

Yet far-seeing cotton textile manufacturers who have carefully canvassed the southern situation are convinced that most of the advantages are but temporary, and because of this fact they are loath to make capital investments in the South.

They argue that there is a limit to the supply of the native white labor in the South; that the day is fast coming when it will be necessary to import textile hands from other sections of the country; that with their advent the labor unions may be expected to direct their efforts toward a stronger foothold in the South from now on; that human nature being the same the world over, the politicians of that section will succumb, exactly as their northern brethren have done, to the same temptations that have been set before the legislators of the New England States, so long as apparent political advantage to the individual is possible.

Labor Problem in South

These men also say that when the day comes for new labor to step in, the southern manufacturer will be compelled to choose between the Negro, whom the native white will not work beside in the same room, or the experienced textile worker of foreign birth or extraction from the North, who will bring with him a different vision respecting labor than now prevails in the South.

If the southern textile head chooses the Negro he will have his troubles; first, because the latter has awakened as a class to his opportunities, and second, because by the time the southern manufacturer exhausts the supply of native white labor he is likely to have a very limited Negro population to approach and largely made up of the aged Negroes.

During the year ending September 1, 1923, the United States Department of Labor reported the migration of 478,700 Negroes from thirteen southern states to northern states, of which number Georgia lost 120,000, Alabama, 90,000, Florida, 90,000, and Mississippi 82,600. Since 1917-1918, when the southern Negro acquired first-hand information of how the other half of the world lives, due to the enlistment of hundreds of thousands of young able-bodied Negroes in the American Army, there has been a constant exodus of young and middle-aged Negroes from every one of the southern states, running in the aggregate into the millions. The situation has become so serious that organized efforts are being made in various southern states to prevent the future migration of the colored people, but it is a Gargantuan task, and public opinion in the South is badly divided, due largely to age-old prejudices.

Disappearance of Southern Advantages Predicted

Many northern textile manufacturers predict that in ten years there will be a leveling-up process in the South and a leveling-down process in the North, the result of which will eliminate the present advantage in favor of the southern competitor.

There are some northern textile men who hesitate to make investments in southern states when they stop to consider the cost per spindle as compared with the cost per spindle in New England. The disparity is so great that they fail to see just how, over a period of years, the southern textile manufacturer is to care for his dividends on the required investment. These men predict that it is necessary to take the long-range view, rather than the happenings of a decade or two.

As these men view the question, the only harm that can come to New England through the development of the textile industry in the South by northern capital will be the transfer of a certain amount of investments which perhaps, under other conditions, would have been made in New England and the loss of a small number of spindles. The problem, as they view it, is not one to cause worry as to the further expansion of the textile industry in New England, but it is rather to keep the present plants in operation until there is an equalization of conditions north and south. New England's future textile development will come from making more out of what it has and from producing goods of superior quality, rather than by making extensive additions to existing mills.

A Serious Situation

The actual moving of one hundred thousand spindles now and then from the North to the South, where owners think they perceive a temporary advantage, will not be noticed in the long run. There is no denying the fact that the situation as it affects cotton textiles alone is serious but it is the very seriousness of it that makes everybody hopeful of the immediate future. The several elements which in the past have been adding one restriction after another are now carefully considering whether Massachusetts has not gone about as far as is prudent, and perhaps a little too far, in "hedging about" the cotton industry with too many repressive statutes and inhibitions.

The man on the street has come to understand that not only the continued existence of the cotton textile industry in Massachusetts, but his own welfare, prosperity and progress are seriously threatened.

Cost Differential Against Northern Manufacturer

Northern textile labor is observing that it means little or nothing to receive twenty or twenty-five dollars a week, but that it is important to ask how many weeks in a year this wage is coming to it.

Progressive northern textile manufacturers do not believe it would be economically or morally just to attempt to bring about an equalization of the wages between northern and southern workers. They appreciate in the first instance that the northern textile employe will always have a cost differential against him on account of higher living costs covering housing, food, heavier clothing, fuel, etc.

Furthermore, the skill of many northern textile operatives, transmitted in many instances through successive generations which have followed textile employment over long periods of years, and the climatic advantages of the North over the South, must be given consideration in the adjustment of wages.

New England can continue to pay higher textile wages than are paid in the South and still successfully compete with that section, making up the difference in quality and quantity production, by the elimination of waste, by superior ingenuity and by economies and greater efficiency.

Changing Nature of Northern Output

It has been said that so long as cotton mills in the southern states enjoy the present manufacturing advantages over their New

England competitors the salvation of the northern industry is to turn to the specialties and finer lines of goods which require more skill to produce and more ability to sell.

Preliminary proofs of the 1921 census of the textile industry show in a striking manner the changes in the character of cotton goods produced in Massachusetts during the period 1919-1921. The government divides manufactured cotton into thirty-one classes. Based on the percentage of the total value of goods of each class produced by the country, Massachusetts lost ground in eleven classes and gained in six, the remaining fourteen showing no appreciable change.

In 1919, Massachusetts produced 82.5 per cent of the value of all tobacco, cheese and bunting cloth, but in 1921 she had dropped to 64.8 per cent, a decline of 21.4 per cent. In tire duck the drop is 45.6 per cent; in ounce duck, except tire, 49.1 per cent and in blankets, 19.2 per cent. These may be classed as the coarser type of goods. The bulk of this production is going to the South.

Of the six groups in which Massachusetts made gains, only one shows startling improvement. That classification is "shirting with silk stripe," one of the finest of cotton fabrics. Here the increase is out of proportion with the other gains. From a 1919 production of 64.5 per cent of the total value of shirting with a silk stripe, Massachusetts rose to 82.9 per cent in 1921, a gain of over 18 per cent.

These figures seem to corroborate the prophets who have so frequently asserted that Massachusetts and New England would solve the present problem of southern textile competition by turning to fine goods of high quality, exactly as this section has solved other apparently insuperable obstacles that have confronted the cotton textile industry of New England in the last hundred years.

American Crop Over 13,000,000 Bales

Cotton production this year was placed at 13,153,000 equivalent 500-pound bales by the Department of Agriculture in its preliminary estimate based on facts available as of December 1. A forecast of 12,992,000 bales was made a fortnight ago. Last year's crop was 10,139,671 bales.

The preliminary estimate of production by States follows: Virginia, 30,000; North Carolina, 765,000; South Carolina, 750,000; Georgia, 1,000,000; Florida 22,000; Alabama, 990,000; Mississippi, 1,080,000; Louisiana, 480,000; Texas, 4,770,000; Arkansas, 1,100,000; Tennessee, 300,000; Missouri, 146,000; Oklahoma, 1,450,000; California, 71,000; Arizona, 110,000; New Mexico, 56,000; all other states 13,000. About 63,000 bales additional to California are being grown in Lower California.

The Census Bureau announced at the same time that 12,225,025 running bales, counting round as half bales, were ginned prior to December 1. To that date last year 9,243,380 bales had been ginned.

Ginnings prior to December by states follow:

Alabama, 952,569; Arizona, 77,771; Arkansas, 978,659; California, 49,239; Florida, 19,321; Georgia, 977,904; Louisiana, 470,793; Mississippi, 1,077,143; Missouri, 126,223; New Mexico, 40,016; North Carolina, 674,429; Oklahoma, 1,285,246; South Carolina, 747,732; Tennessee, 295,886; Texas, 4,423,278; Virginia, 21,492; all other states, 7,325.

The revised total of cotton ginned this season prior to November 14 is 11,163,401 bales. There were 15,181 ginneries operated prior to November 14.

Based on the farm price of cotton on December 1, which was 22.6 cents per pound, this year's production is valued at $1,421,356,262. In addition, the value of the cotton seed will be approximately $200,000,000, and the production of linter cotton probably will run into eight or nine hundred thousand bales.

This year's crop will be the fifth largest in history in point of value, being exceeded in value by the crops of 1917, 1918 and 1923. In point of size the crop is the ninth largest grown, the record crop having been 16,135,000 bales in 1914.

Metal Market Review

New York

Due to improvement in business in general, the demand for all metals, both for export and domestic consumption, has been continuing on a large scale. The steady call for radio sets and accessories is also in part responsible for the high price levels.

ALUMINUM. Automotive demand for this metal appears to be comparatively quiet for the time being. Quotations remain unaltered.

ANTIMONY. The New York market continues quiet and unchanged at 14 to 14⅛ cents, duty paid f. o. b. for carload quantities. Cables from China advise heavy competitive demand for available stocks.

COPPER. Remarkably large sales of copper metal during the middle of December resulted in forcing prices up to new high records for the year. These changed conditions have caused a more cheerful tone in producing circles, and predictions regarding still higher figures are being confidently made.

LEAD. During the middle of December the price of this metal was quoted as being 9.25 cents, New York, but as high as 10 cents was being paid in the outside market for prompt tonnages. The supply of lead throughout the world is limited, and the volume of business is not so large as the higher prices might indicate.

NICKEL. Shot and ingot nickel are quoted unchanged in wholesale lots at 29 to 30 cents a pound, with electrolytic nickel quoted at 33 cents.

STEEL. Conditions in the steel industry continue to show improvement, both in volume of business and production, while indications are that the stronger price situation of the past few weeks will be maintained. Steel ingot production in November was the greatest since April, reaching the point of 77.5 per cent of the high rate in March, and December shows a still further advance. While the October increase in output had been 6½ per cent, the gain of November over October was 7.8 per cent, putting the country on an operating basis of 38,650,000 tons annually.

TIN. Consumers of this metal have been buying in large quantities, while dealers all over the world have been purchasing in the Far Eastern market. Tin reached the highest price for the year about the middle of December, when it was sold for 55¾ cents a pound.

ZINC. During November stocks of zinc decreased 11,540 tons, according to compilations published by the American Zinc Institute. This is the largest drop in several years, putting the surplus at 26,912 tons. November exports of zinc also nearly doubled those of October, the October total having previously been the largest for the year.

Basic Metals

December 24, 1924

	Cents per pound	
Aluminum, virgin, 98@99 per cent	27.00	@28.00
Antimony	16.50	@16.75
Copper—Lake, spot	14.625	@15.00
Electrolytic, spot	14.625	@15.00
Casting refinery	14.375	@
Lead, spot, New York	9.50	@10.25
Lead, spot, East St. Louis	9.25	@10.00
Nickel, ingot, pound	29.00	@32.00
Tin, spot	58.125	@
Zinc, spot, New York	8.02	@ 8.07
Zinc, spot, East St. Louis	7.67	@ 7.72

Steel Wire

BASE PRICE* on No. 9 GAGE AND COARSE

	Cents per pound	
Bright basic	4.25	@ 4.50
Annealed soft	4.50	@ 4.75
Galvanized annealed	5.15	@ 5.40
Coppered basic	5.15	@ 5.40
Tinned soft Bessemer	6.15	@ 6.40

*Regular extras for lighter gage.

Copper Wire

Base price F. O. B. factory

	Cents per pound
Bare copper wire	17.125 @
No. 6 B. & S. gage	17.125 @
No. 8 B. & S. gage	17.125 @
No. 14 B. & S. gage	18.125 @

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
EUROPE													
Austria	.....	.....	.....	.....	1,416	$1,603	5,954	$8,945	.....	.....	.....	.....	.....
Belgium	$4,665	$1,465	$216	$3,465	216	813	10,862	5,563	.....	.....	$69	$2,935	.....
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	208	390	.....	.....	.....	.....	.....
Denmark	392	697	538	.....	3,203	7,714	12,182	12,431	42	$28	960	.....	$30
Esthonia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Finland	3,883	80	.....	.....	.....	.....	.....	.....	.....	.....	30	.....	.....
France	8,175	668	2,519	22,404	.....	.....	6,553	6,864	.....	.....	.....	6,340	95
Germany	1,331	18	.....	.....	1,125	2,394	13,300	13,204	2,112	1,604	510	.....	.....
Gibraltar	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece	.....	56	.....	.....	.....	.....	.....	.....	.....	.....	.....	699	.....
Iceland & Faroe Is.	.....	.....	.....	.....	.....	.....	932	2,711	.....	.....	.....	260	.....
Italy	.....	1,100	591	10,839	568	626	1,069	1,013	25	47	.....	504	.....
Latvia	456	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta Gozo & Cyprus Is.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	991	210	.....	.....	1,113	3,231	3,388	3,073	.....	.....	1,666	781	60
Norway	1,210	1,896	.....	.....	2,643	7,762	10,136	8,722	4,170	2,909	480	1,338	.....
Portugal	.....	.....	.....	.....	.....	.....	3,676	3,168	.....	.....	.....	.....	.....
Rumania	.....	371	.....	.....	1,824	3,648	8,584	6,772	.....	.....	.....	.....	.....
Russia in Europe	.....	71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	656	.....	59	.....	156	468	4,503	3,541	.....	.....	325	.....	.....
Sweden	3,483	202	542	772	2,765	8,305	528	922	2,520	3,902	988	1,120	.....
Switzerland	35	.....	.....	.....	217	735	16,569	13,625	.....	.....	.....	.....	.....
Turkey in Europe	.....	.....	.....	.....	9	30	.....	.....	.....	.....	.....	.....	.....
England	21,050	27,513	7,704	67,439	34,708	76,412	31,480	22,255	1,706	1,276	8,172	24,887	105
Scotland	743	1,115	989	.....	5,277	7,220	3,852	2,488	.....	.....	.....	254	276
Ireland	.....	.....	.....	.....	2	10	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$47,146	$35,462	$13,158	$104,919	55,232	$121,271	133,776	$115,087	10,575	$9,766	$13,200	$39,118	$1,112
NORTH AMERICA													
Canada	$10,888	$8,919	$7,012	$9,653	6,349	$18,543	7,980	$5,640	80	$98	$2,262	$23,685	$2,047
British Honduras	14	.....	55	.....	.....	.....	.....	.....	230	336	23	.....	40
Costa Rica	385	159	138	.....	.....	.....	.....	.....	333	350	2,011	38	147
Guatemala	.....	189	274	.....	.....	.....	.....	.....	1,452	1,227	2,342	.....	49
Honduras	194	148	171	.....	.....	.....	.....	.....	288	358	1,300	4	144
Nicaragua	1,493	326	219	.....	.....	.....	114	66	1,681	1,175	712	.....	.....
Panama	.....	886	1,318	.....	.....	.....	2,867	3,654	5,458	3,747	1,404	933	165
Salvador	12	365	182	202	.....	.....	166	112	.....	.....	5,397	55	.....
Mexico	19,429	14,083	5,703	232	356	1,177	975	660	11,359	10,116	33,343	1,355	3,297
Miquelon & St. Pierre Is.	.....	.....	.....	.....	324	807	216	171	.....	.....	178	.....	.....
Newfoundland & Labrador	2,162	265	1,015	.....	3,499	9,688	13,252	10,299	456	263	2,306	.....	3,769
Bermuda	.....	20	.....	.....	70	188	347	250	129	145	140	.....	205
Barbados	177	62	.....	.....	.....	.....	.....	.....	79	75	.....	141	.....
Jamaica	354	190	.....	.....	.....	.....	.....	.....	4,270	3,660	294	348	15
Trinidad & Tobago	9	297	923	.....	.....	.....	.....	.....	84	75	251	.....	.....
Other British West Indies	385	338	257	.....	.....	.....	1	1	1,922	1,684	.....	139	376
Cuba	4,113	13,998	13,253	.....	24	78	4,218	2,673	61,214	33,390	6,730	8,220	3,888
Dominican Republic	1,134	441	695	.....	.....	.....	.....	.....	23,142	15,825	297	751	1,866
Dutch West Indies	.....	4,645	.....	.....	.....	.....	.....	.....	8,158	5,165	227	.....	255
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	168	131	.....	.....	.....
Haiti	85	305	212	.....	.....	.....	912	673	1,523	1,107	236	217	39
Virgin Islands of U. S.	.....	.....	.....	.....	.....	.....	.....	.....	627	656	66	133	22
TOTALS, NORTH AMERICA	$40,835	$45,636	$31,427	$10,087	10,622	$30,481	31,048	$24,199	122,653	$79,583	$59,519	$36,019	$16,324
SOUTH AMERICA													
Argentina	$5,583	$4,096	$3,101	.....	24	$72	11	$20	70,262	$44,282	$2,374	$23,430	$1,045
Bolivia	3,088	209	.....	.....	.....	.....	.....	.....	64	33	128	101	.....
Brazil	9,675	1,150	1,592	.....	24	72	2,334	1,775	130	97	.....	2,587	98
Chile	8,552	2,860	1,934	.....	80	145	204	130	22,691	15,519	106	929	.....
Colombia	1,509	2,053	624	$157	.....	.....	63	56	7,772	5,302	7,537	680	1,086
Ecuador	.....	746	418	.....	.....	.....	.....	.....	5,405	3,821	813	.....	.....
British Guiana	.....	.....	1,300	.....	.....	.....	.....	.....	96	95	57	161	306
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46
Paraguay	.....	512	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	1,675	552	655	.....	72	207	328	165	432	528	1,640	113	1,481
Uruguay	353	521	58	.....	.....	.....	.....	.....	10,511	6,590	559	2,177	.....
Venezuela	593	1,084	1,342	.....	.....	.....	.....	.....	.....	.....	3,185	1,335	70
TOTALS, SOUTH AMERICA	$31,028	$13,783	$11,024	$157	200	$596	2,840	$2,146	117,663	$76,277	$15,799	$31,513	$4,032
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$1,474	$3,054	$876	.....	.....	.....	.....	.....	6,206	$5,315	.....	$652	.....
Ceylon	313	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	519	.....
Straits Settlements	467	349	.....	.....	.....	.....	.....	.....	2,232	1,913	$207	460	.....
China	4,450	1,288	651	.....	39	$107	2,112	$1,570	1,131	1,061	.....	1,015	.....
Chosen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Java & Madura	1,843	264	545	.....	.....	.....	.....	.....	2,172	2,992	71	6,477	.....
Other Dutch East Indies	.....	.....	139	.....	.....	.....	.....	.....	4	8	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	168	188	.....	.....	.....
Hejaz, Arabia, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	18	.....	.....	.....	.....	.....	.....	590	295	.....	.....	.....
Japan	5,246	9,241	6,017	$14,105	1,560	3,920	4,392	4,310	504	335	13	.....	.....
Kwangtung, leased territory	.....	.....	1,244	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palestine & Syria	.....	.....	.....	.....	88	189	.....	.....	940	867	.....	.....	.....
Persia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	117
Philippine Islands	7,110	4,624	1,486	.....	120	197	.....	.....	33,648	26,273	4,274	2,310	.....
Russia in Asia	.....	.....	.....	.....	4	40	.....	.....	.....	.....	.....	.....	9
Siam	.....	.....	.....	.....	.....	.....	.....	.....	970	673	.....	.....	.....
TOTALS, ASIA	$20,903	$18,866	$10,958	$14,105	1,811	$4,453	6,504	$5,880	48,565	$39,920	$4,565	$11,373	$126

United States by Countries During October, 1924

Pneumatic Casings			Solid Tires		Pneumatic Tubes			Tire Repair Materials Value	Hard Rubber Goods						
Automobile			Automobile and Motor Truck Value	Others Value	Automobile		Others Value		Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
Number	Value	Others Value			Number	Value									
178	$2,317	.....	.....	.....	178	$2,317	.....	.....	.....	.....	.....	.....	.....	.....	.....
2,688	33,180	$231	.....	.....	2,688	33,180	$231	$1,486	$15	.....	$3,275	$52	$665	$26	$184
10	136	.....	.....	.....	10	136	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6,416	73,583	742	$3,698	.....	6,416	73,583	742	368	.....	.....	.....	.....	.....	.....	.....
4	43	.....	.....	.....	4	43	.....	.....	.....	.....	26	.....	1,577	73	220
162	2,615	155	.....	.....	162	2,615	155	274	.....	.....	.....	.....	.....	.....	.....
334	5,492	29	.....	.....	334	5,492	29	593	.....	.....	.....	.....	24	.....	54
292	4,802	.....	187	.....	292	4,802	.....	785	.....	.....	1,063	654	2,797	284	349
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	155	.....	3,922
824	11,278	.....	9,285	$332	824	11,278	.....	807	.....	.....	.....	.....	.....	.....	.....
20	260	.....	.....	.....	20	260	.....	.....	.....	.....	.....	.....	.....	.....	.....
655	6,754	718	.....	.....	655	6,754	718	828	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	181	847	1,368	.....	.....
106	1,054	.....	.....	.....	106	1,054	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,986	28,818	724	230	.....	1,986	28,818	724	1,322	.....	.....	.....	.....	.....	.....	.....
2,176	18,178	.....	3,243	.....	2,176	18,178	.....	908	.....	.....	40	317	600	214	15,478
160	2,714	.....	143	.....	160	2,714	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
600	8,724	.....	.....	.....	600	8,724	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,251	16,615	.....	5,262	.....	1,251	16,615	.....	2,651	.....	.....	.....	.....	.....	.....	.....
3,101	39,094	44	162	.....	3,101	39,094	44	1,512	188	.....	.....	.....	790	.....	369
390	5,487	32	.....	.....	390	5,487	32	.....	.....	.....	.....	.....	457	28	1,123
1	30	.....	.....	.....	1	30	.....	.....	.....	.....	.....	189	1,211	.....	752
15,319	163,136	50	62,559	14	15,319	163,136	50	2,699	320	$16,877	36,236	11,885	36,240	300	42,250
583	6,240	.....	1,177	.....	583	6,240	.....	315	.....	.....	.....	.....	573	.....	260
169	2,406	.....	.....	.....	169	2,406	.....	.....	.....	.....	.....	.....	.....	.....	.....
37,425	$432,956	$2,725	$85,946	$346	37,425	$432,956	$2,725	$14,548	$523	$16,877	$40,821	$13,944	$46,457	$925	$64,961
1,015	$15,675	$421	$5,490	$412	1,015	$15,675	$421	$7,743	$4,435	$1,546	$17,876	$1,435	$12,347	$415	$7,776
17	128	.....	.....	.....	17	128	.....	47	.....	.....	.....	.....	.....	.....	.....
196	3,066	15	264	.....	196	3,066	15	57	.....	.....	53	.....	145	.....	34
219	3,052	.....	22	.....	219	3,052	.....	30	.....	.....	335	105	223	.....	28
122	2,524	3	.....	.....	122	2,524	3	.....	.....	.....	72	76	147	.....	.....
53	720	16	87	.....	53	720	16	.....	.....	.....	.....	.....	72	.....	.....
604	10,028	261	.....	164	604	10,028	261	26	.....	.....	19	395	238	229	326
212	4,071	4	1,619	53	212	4,071	4	66	.....	68	49	.....	.....	.....	264
10,102	112,222	4,906	2,148	1,121	10,102	112,222	4,906	4,195	1,411	1,347	1,977	533	2,894	28	9,481
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
82	646	.....	68	71	82	646	.....	39	.....	.....	108	.....	167	.....	.....
.....	.....	.....	.....	43	.....	.....	.....	.....	.....	.....	.....	.....	253	.....	.....
112	1,730	.....	.....	.....	112	1,730	.....	34	.....	.....	.....	15	2	13	56
267	3,117	.....	1,405	16	267	3,117	.....	85	.....	.....	.....	63	.....	7	30
290	4,453	.....	1,060	.....	290	4,453	.....	79	.....	.....	.....	.....	.....	.....	135
176	1,980	184	.....	.....	176	1,980	184	.....	.....	.....	.....	.....	.....	.....	121
10,933	105,911	1,327	27,226	882	10,933	105,911	1,327	4,777	181	142	1,106	1,675	4,810	27	4,013
1,464	16,270	223	4,002	389	1,464	16,270	223	927	.....	.....	.....	44	191	.....	40
211	1,963	.....	.....	.....	211	1,963	.....	66	.....	.....	10	.....	46	.....	.....
12	121	.....	.....	.....	12	121	.....	.....	.....	.....	.....	.....	.....	.....	.....
359	4,674	.....	.....	199	359	4,674	.....	145	.....	.....	.....	.....	33	.....	31
10	95	.....	.....	.....	10	95	.....	.....	.....	.....	.....	.....	.....	.....	.....
26,456	$292,446	$7,360	$43,391	$3,350	26,456	$292,446	$7,360	$18,316	$6,027	$3,103	$21,605	$4,341	$21,568	$719	$22,331
21,531	$233,090	$1,089	$10,151	$1,346	21,531	$233,090	$1,089	$7,618	.....	$560	.....	.....	.....	$643	$1,134
54	944	.....	.....	.....	54	944	.....	14	.....	.....	.....	.....	$5,578	.....	310
7,261	59,103	9,331	2,153	.....	7,261	59,103	9,331	2,050	.....	.....	$980	$1,403	1,295	378	496
1,091	16,899	.....	2,746	2,365	1,091	16,839	.....	545	$226	2,392	311	.....	336	.....	1,442
817	15,269	375	1,235	269	817	15,269	375	97	.....	5	195	84	1,117	39	1,586
94	1,814	.....	.....	.....	94	1,814	.....	306	.....	.....	13	.....	161	.....	388
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	.....	337
36	259	.....	.....	.....	26	259	.....	.....	.....	.....	.....	.....	.....	.....	.....
47	763	.....	.....	.....	47	763	.....	.....	.....	.....	.....	.....	.....	.....	.....
2,166	38,849	149	3,179	.....	2,166	38,849	149	143	.....	.....	7	148	389	.....	2,423
1,244	13,013	.....	.....	.....	1,244	13,013	.....	451	.....	.....	105	.....	601	30	237
1,635	25,400	.....	.....	256	1,635	25,400	.....	78	.....	.....	.....	110	353	.....	588
35,966	$405,403	$10,944	$19,464	$4,236	35,966	$405,403	$10,944	$11,302	$229	$2,957	$1,611	$1,745	$9,868	$1,090	$8,941
66	$517	.....	.....	.....	66	$517	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,240	15,103	$23	$1,301	$1,200	1,240	15,103	$23	$957	.....	.....	.....	$410	$229	.....	$5,460
342	4,934	.....	285	.....	342	4,934	.....	53	.....	.....	.....	.....	23	.....	143
1,830	17,960	.....	5,363	.....	1,830	17,960	.....	11	.....	.....	$87	.....	.....	.....	640
758	7,150	.....	747	148	758	7,150	.....	.....	.....	$11	310	954	1,003	.....	356
.....	.....	.....	.....	.....	.....	.....	.....	1,336	.....	.....	.....	.....	.....	$27	.....
3,475	38,959	.....	5,740	1,218	3,475	38,959	.....	21	.....	.....	.....	.....	.....	.....	.....
45	599	.....	.....	.....	45	599	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
65	710	.....	.....	.....	65	710	.....	.....	.....	.....	.....	.....	.....	.....	.....
154	1,960	.....	93	.....	154	1,960	.....	.....	.....	.....	.....	.....	.....	.....	.....
4,834	44,138	.....	2,247	.....	4,834	44,138	.....	.....	$64	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	54	.....	.....	168	271	211	.....	128
320	5,370	.....	.....	.....	320	5,370	.....	.....	.....	.....	.....	370	2,280	.....	510
.....	.....	.....	.....	.....	.....	.....	.....	1,710	.....	.....	.....	.....	.....	.....	.....
2,994	30,377	168	6,121	5,941	2,994	30,377	168	856	.....	.....	.....	.....	.....	.....	618
12	221	.....	.....	.....	12	221	.....	.....	.....	.....	780	1,858	1,365	.....	631
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	35	.....	361
16,135	$167,998	$191	$21,897	$8,507	16,135	$167,998	$191	$4,998	$64	$11	$1,354	$3,863	$5,146	$27	$8,847

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
OCEANIA													
Australia	$5,762	$7,771	$3,251	.....	324	$1,137	.....	.....	295	$357	.....	$11,466	$272
British Oceania	.....	81	.....	.....	.....	.....	.....	.....	465	358	.....	.....	.....
French Oceania	.....	.....	61	.....	.....	.....	.....	.....	990	857	$74	.....	23
New Zealand	1,223	2,510	1,371	.....	60	178	1,416	$600	.....	.....	601	2,765	308
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	640	671	.....	.....	.....
TOTALS, OCEANIA	$6,985	$10,362	$4,683	.....	384	$1,315	1,416	$600	2,390	$2,243	$675	$14,231	$603
AFRICA													
Belgian Congo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Africa	.....	.....	.....	.....	.....	.....	50	$18	200	$66	.....	.....	.....
British South Africa	$12,902	$10,603	$2,376	$434	230	$754	.....	.....	886	639	$1,111	$470	$4,351
British East Africa	2,544	29	.....	.....	.....	.....	.....	.....	50	40	.....	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	6	4	229	.....	.....
Egypt	57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,233	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	100	28	.....	.....	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	.....	.....	114	.....	.....	.....	.....	.....	48	36	.....	.....	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	217	.....
TOTALS, AFRICA	$15,103	$10,632	$2,490	$434	230	$754	50	$18	1,270	$813	$1,340	$1,920	$4,351
GRAND TOTALS	$162,000	$134,741	$73,740	$129,702	68,479	$158,870	175,634	$147,930	303,116	$208,602	$95,098	$134,174	$26,548

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

UNMANUFACTURED	September, 1924 Pounds	September, 1924 Value	Six Months Ended September, 1924 April-September Pounds	Six Months Ended September, 1924 April-September Value
Rubber, gutta percha, etc., From United Kingdom	171,601	$35,228	3,196,555	$826,393
United States	1,465,473	348,761	10,541,746	2,357,277
Belgium	.....	.....	50,122	11,393
Ceylon	.....	.....	.....	.....
Straits Settlements	202,279	40,889	1,046,823	218,079
Dutch East Indies	.....	.....	78,474	19,855
France	.....	.....	.....	.....
Netherlands	.....	.....	.....	.....
Other countries	.....	.....	.....	.....
Totals	1,840,353	$424,878	14,912,720	$3,432,997
Rubber recovered	182,110	18,679	1,200,202	114,952
Rubber powdered and rubber or gutta percha scrap	75,658	2,912	2,232,368	75,629
Balata	294	231	2,057	1,663
Rubber substitutes	73,131	20,438	56,504	96,722
Totals	331,193	$42,260	3,485,131	$288,966
PARTLY MANUFACTURED				
Hard rubber sheets and rods	16,532	6,147	92,728	42,729
Hard rubber tubes	.....	1,639	.....	5,665
Rubber thread, not covered	7,460	8,206	36,103	38,321
Totals	23,992	$15,992	128,831	$86,715
MANUFACTURED				
Belting	.....	$8,333	.....	65,158
Hose	.....	7,300	.....	60,061
Packing	.....	2,635	.....	21,983
Boots and shoes, *pairs*	18,452	15,208	73,215	74,626
Clothing, including waterproofed	.....	11,432	.....	90,097
Gloves	.....	1,622	.....	7,947
Hot water bottles	.....	439	.....	2,585
Tires, solid, *number*	418	5,779	4,246	47,517
Tires, pneumatic, *number*	2,737	32,290	31,277	364,070
Inner tubes, *number*	1,562	3,071	18,834	45,209
Elastic, round or flat	.....	16,550	.....	124,834
Mats and matting	.....	1,699	.....	10,332
Cement	.....	2,604	.....	24,772
Other rubber manufactures	.....	116,721	.....	822,329
Totals	.....	$225,083	.....	$1,761,520
Totals, rubber imports	.....	$708,213	.....	$5,570,198

Exports of Domestic and Foreign Rubber Goods

UNMANUFACTURED	September, 1924 Produce of Canada Value	September, 1924 Re-exports or Foreign Goods Value	Six Months Ended September, 1924 April-September Produce of Canada Value	Six Months Ended September, 1924 April-September Re-exports of Foreign Goods Value
Crude and waste rubber	$6,327	.....	$34,706	.....
Totals	$6,327	.....	$34,706	.....
MANUFACTURED				
Belting	$18,454	.....	$199,587	.....
Canvas shoes with rubber soles	156,123	.....	921,047	.....
Boots and shoes	95,216	.....	349,069	.....
Clothing, including waterproofed	1,414	.....	16,325	.....
Hose	15,073	.....	71,686	.....
Tires, casings	505,842	.....	2,680,897	.....
Inner tubes	72,503	.....	427,939	.....
Pneumatic	.....	.....	.....	.....
Solid	5,165	.....	82,019	.....
Vehicle	.....	.....	.....	.....
Other rubber manufactures	33,869	$7,122	155,932	$71,664
Totals	$903,559	$7,122	$4,904,501	$71,664
Totals rubber exports	$909,926	$7,122	$4,939,207	$71,664

United States Rubber Imports by Customs Districts

CUSTOMS DISTRICTS	October, 1924 Pounds	October, 1924 Value	Ten Months Ended October, 1924 Pounds	Ten Months Ended October, 1924 Value
Massachusetts	2,232,757	$500,661	15,239,696	$3,430,445
New York	81,281,694	19,076,678	557,182,943	129,181,689
Philadelphia	788,721	142,367	3,856,183	810,637
Maryland	823,610	143,402	9,737,784	1,974,269
Los Angeles	1,447,302	336,232	9,341,884	2,082,452
San Francisco	645,696	143,225	6,082,309	1,443,357
Oregon	.....	.....	664,940	119,900
Colorado	132,304	29,628	718,942	156,516
Vermont	.....	.....	2,850	587
Buffalo	.....	.....	33,227	5,937
Chicago	.....	.....	80,608	18,861
San Antonio	.....	.....	177,783	31,734
Hawaii	.....	.....	70	21
Totals	87,352,174	$20,372,193	603,118,619	$139,256,395

United States Crude and Waste Rubber Imports for 1924 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1924	Total 1923	Balata	Miscellaneous	Waste
January, *tons*	20,611	731	181	88	.....	.....	21,611	31,197	23	249	95
February	29,977	1,501	192	93	.....	.....	31,763	24,220	47	799	53
March	16,009	980	663	33	67	.....	17,752	33,916	86	98	184
April	41,438	686	139	9	164	.....	42,436	31,588	55	1,371	114
May	22,466	1,176	70	17	185	.....	23,914	36,184½	55	139	104
June	17,810	737	46	115	132	.....	18,840	32,934	15	756	10
July	16,890	1,199	170	43	167	.....	18,469	18,609	26	1,335	50
August	18,397	1,014	567	6	92	.....	20,076	18,674	17	248	...
September	28,362	123	263	85	167	.....	29,000	11,611	15	557	74
October	34,073	2,172	613	157	742	.....	37,157	19,662	93	823	48
November	26,427	1,226	597	237	167	6	28,660	13,392	167	230	74
Totals, 11 months, 1924, *tons*	272,460	11,545	3,501	883	1,283	6	289,678	271,987½	599	6,645	806
Totals, 11 months, 1923, *tons*	256,487	10,498	3,221	578	1,131	72½	.....	.....	769	6,543	3,571

Compiled from Rubber Association statistics.

United States by Countries During October, 1924—*(Continued)*

	Pneumatic Casings			Solid Tires		Pneumatic Tubes				Hard Rubber Goods							
	Automobile			Automobile and Motor Truck		Automobile											
	Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
	6,193	$97,856	.....	$9,652	$229	6,193	$97,856	.....	$2,077	.....	.....	.....	$278	$4,812	$282	$6,079
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	7	172	.....	111	689	7	172	.....	11	.....	.....	.....	.....	.....	.....	.....
	2,838	46,675	$164	16,353	.....	2,838	46,675	$164	905	$762	.....	$199	100	2,357	68	1,454
	56	805	117	184	125	56	805	117	.....	.....	.....	.....	.....	.....	.....	.....
	9,094	$145,508	$281	$26,800	$1,043	9,094	$145,508	$281	$2,993	$762	.....	$199	$378	$7,169	$350	$7,533
	75	$744	.....	.....	.....	75	$744	.....	.....	.....	.....	$3	.....	.....	.....	.....
	314	4,124	.....	.....	.....	314	4,124	.....	.....	.....	.....	.....	$66	.....	.....	.....
	3,129	39,923	.....	$3,928	.....	3,129	39,923	.....	$2,347	.....	.....	.....	544	$422	$244	$4,592
	465	6,634	.....	.....	.....	465	6,634	.....	.....	.....	.....	.....	.....	.....	.....	.....
	274	4,163	.....	2,322	.....	274	4,163	.....	.....	.....	.....	.....	.....	.....	.....	.....
	298	2,710	.....	1,164	.....	298	2,710	.....	.....	.....	.....	.....	.....	100	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	8	63	.....	.....	.....	8	63	.....	.....	.....	.....	.....	.....	.....	.....	.....
	132	1,990	.....	.....	.....	132	1,990	.....	.....	.....	.....	5	.....	.....	.....	73
	4	35	.....	.....	.....	4	35	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	4,699	$60,386	.....	$7,414	.....	4,699	$60,386	.....	$2,347	.....	.....	$8	$610	$522	$244	$4,665
	129,775	$1,504,697	$21,501	$204,912	$17,482	129,775	$1,504,697	$21,501	$54,504	$7,605	$22,948	$65,598	$24,881	$90,730	$3,355	$117,282

United Kingdom Rubber Statistics

Imports

	October, 1924		Ten Months Ended October, 1924	
UNMANUFACTURED				
Crude rubber	Pounds	Value	Pounds	Value
From—				
Straits Settlements	4,795,100	£275,527	49,827,400	£2,767,835
Federated Malay States	2,154,200	130,228	22,562,400	1,272,584
British India	307,300	18,662	7,073,200	399,297
Ceylon and Dependencies	2,119,500	122,335	16,941,200	956,864
Other Dutch Possessions in Indian Seas	286,800	18,495	2,332,700	135,406
Dutch East Indies (except other Dutch Possessions in Indian Seas)	1,143,500	63,711	12,478,300	692,273
Other countries in East Indies and Pacific, not elsewhere specified	96,500	5,618	693,600	38,329
Brazil	1,122,600	54,260	5,992,400	274,082
Peru	15,700	1,100	52,100	2,945
South and Central America (except Brazil and Peru)	11,900	826	169,700	8,633
West Africa:				
French West Africa	1,700	70	1,297,400	56,726
Gold Coast	5,100	301	152,600	6,825
Other parts of West Africa	103,900	4,681	685,700	28,957
East Africa, including Madagascar	107,200	5,680	680,400	33,642
Other countries	367,200	22,322	879,700	50,738
Totals	12,637,600	£723,816	121,818,800	£6,725,136
Waste and reclaimed rubber	312,400	2,328	3,600,200	38,952
Gutta percha and balata	671,700	95,021	7,123,200	950,809
Rubber substitutes	14,700	401	43,800	1,417
Totals	13,636,400	£821,566	132,586,000	£7,716,314
MANUFACTURED				
Boots and shoes...*doz. pairs*	17,155	£55,025	181,892	£396,148
Tires and tubes				
Pneumatic				
Outer covers	.....	174,513	.....	1,786,788
Inner tubes	.....	21,782	.....	338,269
Solid tires	.....	26,114	.....	262,218
Other rubber manufactures	.....	151,071	.....	1,120,387
Total	.....	£428,505	.....	£3,903,810

Exports

UNMANUFACTURED				
Waste and reclaimed	627,800	£6,222	7,479,300	£71,231
Rubber substitutes	107,900	2,409	1,007,700	22,237
Totals	735,700	£8,631	8,487,000	£93,468
MANUFACTURED				
Boots and shoes..*doz. pairs*	20,451	£34,879	216,455	£339,365
Tires and tubes				
Pneumatic				
Outer covers	.....	139,385	.....	1,643,390
Inner tubes	.....	36,897	.....	325,566
Solid tires	.....	23,544	.....	295,193
Other rubber manufactures	.....	266,050	.....	2,463,751
Totals	.....	£560,755	.....	£5,067,265

Exports—Colonial and Foreign

	October, 1924		Ten Months Ended October, 1924	
UNMANUFACTURED				
Crude rubber	Pounds	Value	Pounds	Value
To—				
Russia	.....	.....	901,900	£50,760
Sweden, Norway, and Denmark	78,200	£3,796	2,095,400	115,016
Germany	1,878,200	113,352	14,361,400	813,825
Belgium	430,900	25,700	3,516,300	197,211
France	1,025,300	60,435	26,359,200	1,394,184
Spain	129,400	7,202	798,700	43,133
Italy	896,900	53,832	7,996,600	421,377
Austria	1,700	166	246,800	13,293
Hungary	22,500	1,556	68,700	4,073
Other European countries	174,000	10,219	2,018,300	114,124
United States	18,053,400	1,074,179	71,383,300	4,082,513
Canada	108,500	7,865	4,613,700	276,876
Other countries	75,500	4,683	796,900	45,212
Totals	22,874,500	£1,362,985	135,157,200	£7,571,597
Waste and reclaimed rubber	14,000	287	64,600	1,314
Gutta percha and balata	103,700	14,321	658,800	74,610
Rubber substitutes	.....	.....	1,500	33
Totals	22,992,200	£1,377,593	135,922,100	£7,647,554
MANUFACTURED				
Boots and shoes....*doz. pairs*	324	£672	3,363	£6,698
Tires and tubes				
Pneumatic				
Outer covers	.....	19,624	.....	365,330
Inner tubes	.....	3,313	.....	31,855
Solid tires	.....	1,673	.....	20,693
Other rubber manufactures	.....	5,682	.....	53,787
Totals	.....	£30,964	.....	£478,363

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During October

	Landed for Oct.	Delivered for Oct.	Stocks, October 31		
			1924	1923	1922
LONDON:	Tons	Tons	Tons	Tons	Tons
Plantation	4,835	11,322	37,351	58,535	68,414
Other grades	13	18	104	74	122
LIVERPOOL:					
Plantation	†342	†788	†3,123	†5,906	†7,356
Pará and Peruvian	30	180	140	159	457
Other grades	....	48	150	212	414
Total tons, London and Liverpool	5,220	12,356	40,868	64,886	76,763

† Official returns from six recognized public warehouses.

IMPORTATIONS OF AUTOMOBILES, PARTS AND TIRES FROM THE United States into the Philippines totaled in August, 1923, 393,000 pesos, (1 peso = $0.50). In August, 1924, the value had risen to 568,000 pesos, while the total value of such imports for the first eight months of 1924 is estimated as being 4,436,000 pesos.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
NOVEMBER 19. By "Hubert," Pará, Iquitos and Manáos.					
H. A. Astlett & Co.	357	25	120	23	....
H. A. Astlett & Co.	....	....	‡73	‡292	....
Paul Bertuch & Co.	*377	....	....	....	....
Paul Bertuch & Co.	†276	....	....	**20	....
General Rubber Co.	425	17	209	‡327	18
L. Littlejohn & Co., Inc.	1,544	90	166	1,314	....
Meyer & Brown, Inc.	¶219	....	....	....	....
Poel & Kelly, Inc.	784	8	301	164	....
NOVEMBER 25. By "Laconia," Liverpool.					
Poel & Kelly, Inc.	....	....	....	352	....
DECEMBER 6. By "Lassell," Brazil.					
H. A. Astlett & Co.	81	....	....	32	....
H. A. Astlett & Co.	‡146	....	‡146	....	....
Paul Bertuch & Co.	86	....	§95	**710	....
General Rubber Co.	....	....	....	....	123
Meyer & Brown, Inc.	¶¶780	....	....	¤124	....
Poel & Kelly, Inc.	137	2	292	127	....
DECEMBER 10. By "Aidan," Brazil.					
H. A. Astlett & Co.	280	1	1	3	....
H. A. Astlett & Co.	....	....	....	‡73	....
Paul Bertuch & Co.	*100	....	*25	*80	....
General Rubber Co.	446	26	128	15	††138
L. Littlejohn & Co., Inc.	18	1	....	....	....
Meyer & Brown, Inc.	¶165	....	237	914	....
Poel & Kelly, Inc.	178	....	165	82	....

¶Fine and medium. §Skins. ¤Packages.
††Includes 3 cases.
¶¶Includes 45 cases of mixed grades.
‡Washed and dried in Brazil. *Casks. †Pelles. **Bales.

Plantations

NOVEMBER 17. By "Aymeric," Far East.

H. A. Astlett & Co.	1,351 cases
General Rubber Co.	500 cases
L. Littlejohn & Co., Inc.	1,700 cases
H. Muehlstein & Co., Inc.	860 cases
Poel & Kelly, Inc.	505 cases
Chas. T. Wilson Co., Inc.	1,045 cases

NOVEMBER 17. By "Gaasterdyk."

Chas. T. Wilson Co., Inc.	138 cases

NOVEMBER 17. By "Perseus," Far East.

H. A. Astlett & Co.	1,095 cases
H. A. Astlett & Co.	*390 cases
Fisk Rubber Co.	45 cases
General Rubber Co.	328 cases
Hood Rubber Co.	*382 cases
J. T. Johnstone & Co., Inc.	761 cases
L. Littlejohn & Co., Inc.	10,471 cases
Mitsui & Co., Ltd.	904 cases
H. Muehlstein & Co., Inc.	1,300 cases
Poel & Kelly, Inc.	2,216 cases
Chas. T. Wilson Co., Inc.	2,763 cases

NOVEMBER 17. By "Romeo." Far East.

H. A. Astlett & Co.	2,739 cases
H. A. Astlett & Co.	*75 cases
Paul Bertuch & Co.	100 cases
General Rubber Co.	1,574 cases
L. Littlejohn & Co., Inc.	9,849 cases
H. Muehlstein Co., Inc.	1,735 cases
Chas. T. Wilson Co., Inc.	1,260 cases

NOVEMBER 17. By "Veendyk," Far East.

H. A. Astlett & Co.	560 cases
H. A. Astlett & Co.	*164 cases
General Rubber Co.	3,336 cases
L. Littlejohn & Co., Inc.	4,641 cases
H. Muehlstein & Co., Inc.	1,600 cases
Poel & Kelly, Inc.	1,833 cases
Chas. T. Wilson, Inc.	240 cases

NOVEMBER 19. By "American Farmer," London.

General Rubber Co.	1,655 cases

NOVEMBER 19. By "Aurania," Europe.

L. Littlejohn & Co., Inc.	148 cases

NOVEMBER 21. By "Maryland," London.

Hood Rubber Co.	364 cases

NOVEMBER 21. By "President Van Buren," Far East.

H. A. Astlett & Co.	50 cases
H. A. Astlett & Co.	*100 cases
L. Littlejohn & Co., Inc.	2,555 cases
Meyer & Brown, Inc.	930 cases
Vernon Metal & Produce Co., Inc.	350 cases
Chas. T. Wilson Co., Inc.	175 cases

NOVEMBER 22. By "Liverpool Maru," Hamburg.

Fred Stern & Co., Inc.	107 cases

NOVEMBER 23. By "Port Curtis," London.

Vernon Metal & Produce Co., Inc.	199 cases

NOVEMBER 24. By "Maihar," Far East.

Paul Bertuch & Co.	*112 cases
L. Littlejohn & Co., Inc.	2,481 cases
Meyer & Brown, Inc.	658 cases
Poel & Kelly, Inc.	224 cases

NOVEMBER 24. By "Malacca Maru," Far East.

J. T. Johnstone & Co., Inc.	112 cases
L. Littlejohn & Co., Inc.	1,200 cases
Meyer & Brown, Inc.	375 cases
Poel & Kelly, Inc.	406 cases

NOVEMBER 25. By "Minnetonka," London.

Chas. T. Wilson Co., Inc.	44 cases

NOVEMBER 25. By "Manhattan," London.

General Rubber Co.	42 cases
Chas. T. Wilson Co., Inc.	18 cases

NOVEMBER 25. By "London Commerce," Europe.

L. Littlejohn & Co., Inc.	4,482 cases
Chas. T. Wilson Co., Inc.	91 cases

NOVEMBER 25. By "American Shipper," Europe.

L. Littlejohn & Co., Inc.	51 cases

NOVEMBER 28. By "Davisian," London.

Hood Rubber Co.	*70 cases

*Arrived at Boston.

NOVEMBER 28. By "Anyo Maru," Singapore.

H. A. Astlett & Co.	500 cases

NOVEMBER 28. By "Gaelic Prince," Singapore.

J. T. Johnstone & Co., Inc.	546 cases

NOVEMBER 28. By "Karonga," Singapore.

Fisk Rubber Co.	164 cases
L. Littlejohn & Co., Inc.	1,078 cases
H. Muehlstein & Co., Inc.	600 cases

NOVEMBER 28. By "M. S. Dollar," Far East.

H. A. Astlett & Co.	102 cases
Baird Rubber & Trading Co., Inc.	360 cases
Hood Rubber Co.	117 cases
L. Littlejohn & Co., Inc.	900 cases
Meyer & Brown, Inc.	277 cases
Mitsui & Co., Ltd.	207 cases
Poel & Kelly, Inc.	70 cases
Fred Stern & Co., Inc.	223 cases

NOVEMBER 28. "Steel Ranger," Far East.

H. A. Astlett & Co.	200 cases
Baird Rubber & Trading Co., Inc.	451 cases
General Rubber Co.	3,024 cases
L. Littlejohn & Co., Inc.	2,357 cases
Meyer & Brown, Inc.	772 cases
Mitsui & Co., Ltd.	100 cases
H. Muehlstein Co., Inc.	865 cases
Poel & Kelly, Inc.	310 cases
Chas. T. Wilson Co., Inc.	945 cases

NOVEMBER 28. By "West Canon," Far East.

Hood Rubber Co.	*256 cases

DECEMBER 1. By "Gothic Prince," Far East.

H. A. Astlett & Co.	3,183 cases
H. A. Astlett & Co.	*201 cases
Baird Rubber & Trading Co., Inc.	4,283 cases
Paul Bertuch & Co.	50 cases
General Rubber Co.	661 cases
Hood Rubber Co.	*568 cases
Hood Rubber Co.	*58 bales
L. Littlejohn & Co., Inc.	16,260 cases
Meyer & Brown, Inc.	2,823 cases
Mitsui & Co., Ltd.	144 cases
H. Muehlstein & Co., Inc.	1,450 cases
H. Muehlstein & Co., Inc.	*100 cases
Poel & Kelly, Inc.	4,499 cases; *405 cases
Fred Stern & Co., Inc.	92 cases
Vernon Metal & Produce Co., Inc.	422 cases
Chas. T. Wilson Co., Inc.	1,680 cases

DECEMBER 2. By "Westerdyk," Rotterdam.

H. Muehlstein & Co., Inc.	139 cases

DECEMBER 3. By "American Trader," London.

General Rubber Co.	3,273 cases

DECEMBER 3. By "Madioen," Far East.

H. A. Astlett & Co.	823 cases
H. A. Astlett & Co.	*247 cases
Fisk Rubber Co.	51 cases
General Rubber Co.	1,958 cases
J. T. Johnstone & Co., Inc.	355 cases
L. Littlejohn & Co., Inc.	3,437 cases
Meyer & Brown, Inc.	620 cases
H. Muehlstein & Co., Inc.	1,896 cases
Poel & Kelly, Inc.	1,546 cases
Fred Stern & Co., Inc.	487 cases
Vernon Metal & Produce Co., Inc.	86 cases
Chas. T. Wilson Co., Inc.	505 cases

DECEMBER 3. By "Silvereim," Far East.

H. A. Astlett & Co.	1,019 cases
Baird Rubber & Trading Co., Inc.	100 cases
General Rubber Co.	3,447 cases
J. T. Johnstone & Co., Inc.	418 cases
L. Littlejohn & Co., Inc.	3,386 cases
Meyer & Brown, Inc.	440 cases
H. Muehlstein & Co., Inc.	316 cases
Poel & Kelly, Inc.	806 cases
Chas. T. Wilson Co., Inc.	80 cases

DECEMBER 3. By "Walton Hall," Far East.

Baird Rubber & Trading Co., Inc.	112 cases
Hood Rubber Co.	56 cases
L. Littlejohn & Co., Inc.	1,266 cases
Meyer & Brown, Inc.	983 cases
Poel & Kelly, Inc.	280 cases

DECEMBER 4. By "Selma City," Far East.

Baird Rubber & Trading Co., Inc.	329 cases
Meyer & Brown, Inc.	1,161 cases
Poel & Kelly, Inc.	168 cases

DECEMBER 5. By "President Hayes," Far East.

L. Littlejohn & Co., Inc.	3,104 cases
Meyer & Brown, Inc.	370 cases
H. Muehlstein & Co., Inc.	200 cases
Poel & Kelly, Inc.	86 cases
Vernon Metal & Produce Co., Inc.	350 cases
Chas. T. Wilson Co., Inc.	591 cases

DECEMBER 6. By "Mesaba," London.

General Rubber Co.	4,533 cases

DECEMBER 8. By "Minnewaska," London.

General Rubber Co.	1,485 cases

DECEMBER 9. By "City of Yokohama," Far East.

H. A. Astlett & Co.	1,292 cases
H. A. Astlett & Co.	*500 cases
Baird Rubber & Trading Co., Inc.	150 cases
Baird Rubber & Trading Co., Inc.	100 cases
General Rubber Co.	862 cases
Hood Rubber Co.	*319 cases
J. T. Johnstone & Co., Inc.	1,522 cases
L. Littlejohn & Co., Inc.	6,953 cases
Meyer & Brown, Inc.	1,390 cases
Mitsui & Co., Ltd.	603 cases
H. Muehlstein & Co., Inc.	1,368 cases
Poel & Kelly, Inc.	3,940 cases
Fred. Stern & Co., Inc.	150 cases
Chas. T. Wilson Co., Inc.	2,021 cases

DECEMBER 9. By "Carmania."

L. Littlejohn & Co., Inc.	255 cases
Vernon Metal & Produce Co., Inc.	177 cases

DECEMBER 11. By "American Merchant."

L. Littlejohn & Co., Inc.	102 cases

DECEMBER 12. By "Clan Mac Vicar," Far East.

Baird Rubber & Trading Co., Inc.	529 cases
General Rubber Co.	144 cases
L. Littlejohn & Co., Inc.	800 cases
Meyer & Brown, Inc.	300 cases
H. Muehlstein & Co., Inc.	*329 cases
Poel & Kelly, Inc.	301 cases

DECEMBER 15. By "Buitenzorg," Far East.

H. A. Astlett & Co.	*179 cases
Baird Rubber & Trading Co., Inc.	273 cases
Fisk Rubber Co.	65 cases
General Rubber Co.	165 cases
J. T. Johnstone & Co., Inc.	398 cases
L. Littlejohn & Co., Inc.	3,412 cases
Meyer & Brown, Inc.	866 cases
Poel & Kelly, Inc.	949 cases
Fred Stern & Co., Inc.	22 cases
Vernon Metal & Produce Co., Inc.	280 cases
Chas. T. Wilson Co., Inc.	227 cases

DECEMBER 16. By "Verbania," London.

Vernon Metal & Produce Co., Inc.	493 cases

DECEMBER 17. By "Boschdyck," Rotterdam.

H. Muehlstein & Co., Inc.	*200 cases

DECEMBER 18. By "Tencer," Far East.

J. T. Johnstone & Co., Inc.	519 cases
Meyer & Brown, Inc.	3,753 cases
Poel & Kelly, Inc.	5,499 cases
Fred Stern & Co., Inc.	1,143 cases
Vernon Metal & Produce Co., Inc.	404 cases

DECEMBER 18. By "Vardulia," Far East.

Poel & Kelly, Inc.	2,720 cases
Vernon Metal & Produce Co., Inc.	323 cases

DECEMBER 20. By "Bowes Castle," Far East.

Poel & Kelly, Inc.	12,115 cases

Africans

NOVEMBER 24. By "Laconia," Europe.

L. Littlejohn & Co., Inc.	25 cases

NOVEMBER 30. By "Caronia," Europe.

L. Littlejohn & Co., Inc.	48 cases

DECEMBER 2. By "Westerdyk," Rotterdam.

General Rubber Co.	188 cases

DECEMBER 2. By "Zorembo," Bordeaux.

Poel & Kelly, Inc.	591 bales

DECEMBER 15. By "Buitenzorg," Far East.

Hood Rubber Co.	*42 cases

Balata

NOVEMBER 19. By "Hubert," Iquitos and Manáos.

H. A. Astlett & Co.	243 cases
Paul Bertuch & Co.	75 casks

NOVEMBER 25. By "Commewyne," Dutch Guiana.

Middleton & Co., Ltd.	171 bales

DECEMBER 10. By "Aidan," Iquitos.

H. A. Astlett & Co.	130 cases
Paul Bertuch & Co.	174 pkgs.

Guayule

NOVEMBER 17. By "Montgomery," Mexico.

Continental Rubber Co.	560 cases

NOVEMBER 25. By "Mexico," Mexico.

Continental Rubber Co.	1,060 cases

DECEMBER 1. By "Panneo," Mexico.

Continental Rubber Co.	777 cases

DECEMBER 15. By "Yumuri," Mexico.

Continental Rubber Co.	618 cases

Maniçobas

DECEMBER 10. By "Culberson," Brazil.

Adolph Hirsch & Co., Inc.	60 bales

Rubber Latex

NOVEMBER 28. By "Steel Ranger," Far East.

General Rubber Co.	206,400 lbs.

Plantation Rubber Exports from Dutch East Indies

Java and Madura

To—	August 1923 Kilos	August 1924 Kilos	Eight Months Ended August 1923 Kilos	Eight Months Ended August 1924 Kilos
Holland	272,000	233,000	2,058,000	2,576,000
Great Britain	419,000	626,000	3,494,000	4,773,000
Germany	50,000	8,000	220,000	267,000
France	70,000	5,000	385,000	249,000
Belgium	.....	.....	.....	9,000
Italy	21,000	32,000	203,000	264,000
Canada	.....	.....	54,000	.....
United States	758,000	3,083,000	13,818,000	17,619,000
Singapore	88,000	274,000	1,082,000	2,004,000
Hongkong	.....	.....	.....	27,000
Japan	53,000	.....	258,000	687,000
Australia	2,000	2,000	156,000	236,000
Totals	1,733,000	4,263,000	21,728,000	28,711,000
Tandjoengpriok	678,000	1,871,000	8,743,000	10,871,000
Tjerebon	.....	10,000	55,000	56,000
Samarang	195,000	302,000	1,594,000	2,045,000
Surabaya	506,000	1,443,000	8,402,000	11,631,000
Pasuruan	99,000	94,000	735,000	901,000
Probalingga	72,000	167,000	456,000	794,000
Panarukan	131,000	124,000	817,000	947,000
Banjuwangi	15,000	125,000	592,000	625,000
Tjilatjap	37,000	127,000	334,000	840,000

Belawan-Deli

To				
Holland	264,000	89,000	1,266,000	1,233,000
Great Britain	545,000	435,000	1,950,000	2,858,000
Germany	10,000	15,000	120,000	263,000
France	15,000	.....	80,000	202,000
Belgium	84,000	22,000	171,000	27,000
Italy	51,000	31,000	195,000	197,000
United States	1,912,000	2,944,000	16,877,000	18,522,000
Singapore	105,000	82,000	1,861,000	653,000
Straits Settlements	.....	.....	152,000	.....
Penang	75,000	74,000	351,000	609,000
Australia	.....	5,000	1,000	12,000
Other countries	.....	4,000	9,000	117,000
Totals	3,061,000	3,701,000	23,033,000	24,693,000

Java and Madura

To	September 1923 Kilos	September 1924 Kilos	Nine Months Ended September 1923 Kilos	Nine Months Ended September 1924 Kilos
Holland	254,000	174,000	2,312,000	2,750,000
Great Britain	615,000	452,000	4,109,000	5,225,000
Germany	68,000	4,000	288,000	271,000
France	25,000	1,000	410,000	250,000
Belgium	.....	5,000	.....	14,000
Italy	19,000	25,000	222,000	289,000
Canada	.....	.....	54,000	.....
United States	1,178,000	3,169,000	14,996,000	20,788,000
Singapore	122,000	146,000	1,204,000	2,150,000
Hongkong	.....	.....	.....	27,000
Japan	41,000	.....	299,000	687,000
Australia	8,000	3,000	164,000	239,000
Totals	2,330,000	3,979,000	24,058,000	32,690,000
Tandjoengpriok	1,036,000	1,692,000	9,779,000	12,563,000
Tjerebon	13,000	.....	68,000	56,000
Samarang	109,000	302,000	1,703,000	2,347,000
Surabaya	781,000	1,473,000	9,183,000	13,104,000
Pasuruan	96,000	102,000	831,000	1,003,000
Probalingga	80,000	152,000	536,000	946,000
Panarukan	107,000	135,000	924,000	1,082,000
Banjuwangi	53,000	82,000	645,000	707,000
Tjilatjap	52,000	41,000	386,000	881,000

Belawan-Deli

Holland	106,000	137,000	1,372,000	1,370,000
Great Britain	484,000	601,000	2,434,000	3,459,000
Germany	40,000	15,000	160,000	278,000
France	122,000	34,000	202,000	236,000
Belgium	33,000	.....	204,000	27,000
Italy	31,000	20,000	226,000	217,000
United States	2,055,000	3,314,000	18,932,000	21,836,000
Singapore	94,000	60,000	1,955,000	713,000
Straits Settlements	.....	.....	152,000	.....
Penang	69,000	94,000	420,000	703,000
Australia	.....	5,000	1,000	17,000
Other countries	.....	2,000	9,000	119,000
Totals	3,034,000	4,282,000	26,067,000	28,975,000

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	October, 1924 Pounds	October, 1924 Value	Ten Months Ended October, 1924 Pounds	Ten Months Ended October, 1924 Value
UNMANUFACTURED—*free*				
Crude rubber	87,352,174	$20,372,193	601,829,220	$139,315,180
Balata	231,088	127,797	813,946	440,828
Jelutong or Pontianak	869,470	80,869	12,849,364	1,155,448
Gutta percha	47,207	6,794	2,717,982	407,033
Guayule	106,000	18,508	2,312,183	409,752
Rubber scrap	881,646	22,774	8,120,695	317,699
Totals	89,487,585	$20,629,935	628,643,390	$142,045,940
Chicle *dutiable*	643,103	313,720	5,772,896	2,939,880
MANUFACTURED—*dutiable*				
Rubber belting	881,646	22,774	8,120,695	317,699
Other manufactures of substitute for rubber	.....	84,795	.....	1,848,952
Totals	881,646	$107,569	8,120,695	$2,166,651

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,125,547	$578,448	18,212,339	$4,381,581
Balata	9,369	5,947	358,066	211,924
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitute and scrap	.....	.....	53,072	2,079
Totals	2,134,916	$584,395	18,623,477	$4,595,584
Chicle	.....	.....	129,508	48,179
MANUFACTURED				
Gutta percha and India rubber	24,042	$8,527	70,416	$31,545
Totals	24,042	$8,527	70,416	$31,545

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	428,973	$39,536	4,329,973	$414,632
Scrap and old	1,731,902	64,162	16,577,210	634,324
Footwear				
Boots *pairs*	68,479	158,870	484,215	1,199,662
Shoes *pairs*	175,634	147,930	1,454,605	1,213,454
Canvas shoes with rubber soles, *pairs*	303,116	208,602	3,069,388	2,374,842
Druggists' rubber sundries.				
Water bottles and fountain syringes *number*	33,632	24,881	213,841	164,732
Other druggists' rubber sundries	72,678	90,730	590,091	705,639
Bathings caps *dozen*	1,850	3,355	139,640	262,876
Hard rubber goods				
Battery jars and accessories	22,757	7,605	338,581	98,127
Other electrical supplies	18,495	22,948	114,506	82,940
Other hard rubber goods	54,744	65,598	369,043	448,121
Tires				
Pneumatic casings				
For automobiles *number*	129,775	1,504,697	1,042,038	12,803,331
Others *number*	5,059	21,501	42,155	167,334
Pneumatic tubes				
For automobiles *number*	109,982	195,707	939,143	1,729,114
Others *number*	6,545	4,985	41,384	36,421
Solid tires				
For automobiles and motor trucks *number*	8,124	204,912	89,128	2,320,471
Others *number*	64,806	17,482	1,040,427	259,653
Tire accessories	134,514	54,504	1,124,678	443,527
Belting	286,737	162,000	3,091,844	1,816,931
Hose	354,466	134,741	3,840,699	1,505,898
Packing	157,945	73,740	1,613,725	707,126
Soles and heels	293,338	95,098	2,098,866	686,037
Thread	114,895	129,702	973,946	1,057,685
Other rubber manufactures	321,546	258,565	3,613,794	2,130,224
Totals	.....	$3,691,851	.....	$33,263,101

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC Reg. U.S. Pat. Off.
GUTTA-PERCHA Reg. United Kingdom.

Vol. 71 JANUARY 1, 1925 No. 4

TABLE OF CONTENTS

Editorials	Pages
New Year's Greetings	207
Increase in Industrial Accidents	207
A Billion for Rubber Bridge Paving	207-208
Balloon Tires on the Desert	208
Minor Editorial	208
Dipped Rubber Glove Manufacture. By John Hadfield ..... Illustrated	209-211
Rubber Tile Feature Joints. By Elmer Swanson Illustrated	212
Balloon Tire Progress to Date—II	213-214
Tire and Rim Association Report of Rims Inspected and Approved During October and November, 1924	214
Dealers' Stocks of Automobile Tires	215-216
National Tire Dealers' Association Resolutions	216
Rubber Machinery Depreciation. By Rhodes Polleys Graph	217-218
Plantation Rubber Industry	218
Manufacture of Automobile Brake Lining ..Illustrated	219-220
Chemistry	
What the Rubber Chemists Are Doing	221-222
Chemical Patents	222
Rubber Trade Association Annual Dinner ..Illustrated	223
New Machines and Appliances ..... Illustrated	224-226
Five Platen Heel Press. Reinforced Mandrels. Individual Motor Drive Unit. Electric Elevator Stacking Tractor. Seamless Steam Jacketed Mixers. Shoe Sole Crêpe Machine. Fusing Process for Tire Retreading and Repairing. Flexible Rubber Shaft Coupling.	
Machinery Patents ..... Illustrated	226-227
Machine for Treating Rubber. Hot Plate for Vulcanizing Presses. Machine for Making Articles of Plastic Compounds of Different Colors. Apparatus for Vulcanization. Vulcanizing Apparatus. Apparatus for Cutting Tires. Gluing Device for Tire-Wrapping Machines. Flap-Making Machine. Other Machinery Patents.	
Process Patents	227
Rubber Association of America, Inc.—Activities of	228
New Goods and Specialties ..... Illustrated	229-231
A Temporary High Chair. Rubber Snubber for Automobiles. Hard Rubber Pen and Pencil Combination. Cone Seal Rubber Tank Ball. "Glass-Mobile" Curtains. Endless Laminated Cord Fan Belt. The Goodrich New Radio Tube Socket. New Hard Rubber Cue Tip. A Family of Sponge Rubber Bathtub Dolls. Barking Dog Rubber Bulb Toy. Rubber Buffer Strips on Subway Car Doors. Felt-Top Sponge Rubber Chair Cushion. Rubber Specialties for the Office. Pop-Gun with Captive Rubber Projectile. Sponge Rubber Foot Easers and Arch Supports. Insulating Rubber Glove and Sleeve Combined. Balloon Cords for All Size Rims.	
Editor's Book Table	232
"Rubber Producing Companies, 1924, Official Guide for Investors in Rubber Shares." "The Acidity of Raw Rubber." "Constitution, By-Laws and Rules of the Rubber Trade Association of New York, Inc."	
New Trade Publications	232
Recent Articles Relating to Rubber	232-233
Inquiries and Trade Opportunities	233
Foreign Rubber Trade Information	233
American Rubber Trade—News and Personals	
Rubber Industry Outlook	234
Stock Quotations	234
Dividends	234
New Incorporations	234-235
East and South ..... Illustrated	235-236
New Jersey	236-237
Rhode Island	237-238
Massachusetts ..... Illustrated	238-239
S. S. Miller, (Portrait and Sketch)	240
Ohio	240-241
Midwest	242
Pacific Coast	242-243
Canada	244
Foreign Rubber News	
Europe	245-247
Planting	
Far East ..... By Our Correspondent	248-249
Patents Relating to Rubber	250-252
United States. Canada. United Kingdom. New Zealand. Germany.	
Trade Marks	252-253
United States. Canada. United Kingdom. New Zealand.	
Designs	253
United States.	
The Cotton Outlook	260-261
Markets	
Crude Rubber ..... Graph	254-255
New York Average Spot Rubber Prices	254
Highest and Lowest New York Spot Rubber Prices	255
Reclaimed Rubber	256
Rubber Scrap	256
Chemicals and Other Ingredients	257-258
Cotton and Other Fabrics ..... Graph	259
Metal Market Review	261
Statistics	
Canada, Statistics for September, 1924	264
Java, Rubber Exports	267
Malaya, British Rubber Exports	255
United Kingdom, Statistics for October, 1924	265
London and Liverpool Landings, Deliveries and Stocks	265
United States	
Exports of India Rubber Manufactures During October, 1924	262-265
Imports by Months, During 1924	264
Crude Rubber Arrivals at New York as Reported by Importers	266-267
Custom House Statistics	264
Statistics for October, 1924	266